

**COURSE CURRICULUM FOR THIRD PROFESSIONAL BAMS
(PRESCRIBED BY NCISM)**

शास्त्रं ज्योतिः प्रकाशार्थं दर्शनं बुद्धिरात्मनः।

Research Methodology and Medical-statistics

(SUBJECT CODE : AyUG-RM)

(Applicable from 2021-22 batch, from the academic year 2024-25 onwards for 5 batches or until further notification by NCISM, whichever is earlier)



**BOARD OF AYURVEDA
NATIONAL COMMISSION FOR INDIAN SYSTEM OF MEDICINE
NEW DELHI-110026**



NCISM
III Professional Ayurvedacharya
(BAMS)
Subject Code : AyUG-RM
 Research Methodology and Medical-statistics

Summary

Total number of Teaching hours: 75			
Lecture (LH) - Theory		25	25(LH)
Paper I	25		
Non-Lecture (NLHT)		50	50(NLH)
Paper I	50		
Non-Lecture (NLHP)		0	
Paper I	0		

Examination (Papers & Mark Distribution)					
Item	Theory Component Marks	Practical Component Marks			
		Practical	Viva	Elective	IA
Paper I	50	-	-	-	-
Sub-Total	50	-			
Total marks	50				

Important Note :- The User Manual III BAMS is a valuable resource that provides comprehensive details about the curriculum file. It will help you understand and implement the curriculum. Please read the User Manual III before reading this curriculum file. The curriculum file has been thoroughly reviewed and verified for accuracy. However, if you find any discrepancies, please note that the contents related to the MSE should be considered authentic. In case of difficulty and questions regarding curriculum write to syllabus24ayu@ncismindia.org

PREFACE

Research is a crucial component of scientific progress, and its inclusion in the undergraduate Ayurveda curriculum strengthens the foundation of evidence-based practice. Ayurveda, as a traditional system of medicine, requires systematic validation through research to align with contemporary healthcare needs. Introducing research methodology at the undergraduate level enables students to critically evaluate classical texts, explore integrative medicine, and develop scientific reasoning. This knowledge helps in hypothesis formulation, data analysis, and meaningful interpretation, ultimately enhancing the credibility of Ayurveda in the global healthcare system.

With the advancement of new Teaching-Learning (TL) methods, such as problem-based learning (PBL), experiential learning, digital tools, and artificial intelligence, students can actively engage with research concepts. Methods like flipped classrooms, case-based discussions, and hands-on practicals allow a deeper understanding of study designs, statistical tools, and critical appraisal techniques. The application of these techniques ensures accuracy and reliability in Ayurvedic research. Furthermore, learning about intellectual property rights (IPR), ethical considerations, and research reporting guidelines prepares students to contribute to academic publications, innovation, and policy-making in Ayurveda.

In the third professional year, research training plays a transformative role by bridging theoretical knowledge with clinical application. At this stage, students are exposed to clinical trials, literary research, preclinical studies, and statistical analysis, enabling them to integrate research findings into patient care. This phase prepares students for advanced clinical decision-making, postgraduate studies, and scientific contributions. By fostering analytical thinking and innovation, research education ensures that Ayurveda remains a dynamic and evolving system of medicine, blending ancient wisdom with modern scientific advancements for holistic and evidence-based healthcare.

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Course Code and Name of Course

Course code	Name of Course
AyUG-RM	Research Methodology and Medical-statistics

Table 1 : Course learning outcomes and mapped PO

SR1 CO No	A1 Course learning Outcomes (CO) AyUG-RM At the end of the course AyUG-RM, the students should be able to-	B1 Course learning Outcomes mapped with program learning outcomes.
CO 1	Explain and utilize research methods and statistical concepts.	PO1,PO2
CO 2	Distinguish, analyse and apply research types. Recognize their application in ayurveda.	PO2,PO9
CO 3	Explore and utilize various databases and guidelines.	PO2,PO8
CO 4	Distinguish, analyse and apply statistical tests. Recognize their application in ayurveda.	PO2,PO9
CO 5	Apply ethical aspect in conducting quality research.	PO6,PO9

Table 2 : Contents of Course

Paper 1 (RM-MS)						
Sr. No	A2 List of Topics	B2 Term	C2 Marks	D2 Lecture hours	E2 Non- Lecture hours Theory	E2 Non- Lecture hours Practical
1	Introduction to Research 1. Objectives 2. Need and Scope 3. Concept of Evidence-Based Medicine and Integrative Medicine	2	30	1	0	0
2	Historical developments in research 1. Describe historical development of Contemporary research. 2. Identify evidences of research in ayurveda classical literature.	2		0	1	0
3	Research Types 1. Primary and Secondary 2. Basic, Applied and Translational 3. Qualitative, Quantitative and Mixed 4. Observational and Interventional 5. Descriptive and Analytical	2		2	2	0
4	Research Ethics 1. Need and significance 2. Institutional Animal Ethics Committee (IAEC) and Institutional Human Ethics Committee (IHEC/IEC). 3. Publications ethics	2		1	1	0
5	Research Designs and terminologies 1. Case reports 2. Case Series 3. Cross sectional and longitudinal 4. Cohort studies 5. Case Control 6. Clinical trials (Randomised controlled trials) 7. Literary Research and reviews 8. Preclinical Methods (In-silico, In-vitro, In situ and In-vivo).	2		4	8	0

	9. Terminologies: Randomisation, matching, Blinding, and Bias.					
6	Research process 1. Selecting a research topic and research problem 2. Reviewing of literature. 3. Formulating research hypothesis and objectives 4. Planning the research (materials and methods) 5. Conducting the research (data collection, analysis and interpretation) 6. Drawing conclusions. 7. Reporting of Research (Scientific writing)	2		3	6	0
7	Different Database, portals and Artificial Intelligence. 1. Database like PubMed, SCOPUS etc. 2. Portals like AYUSH Research Portal, NAMASTE etc. 3. Artificial Intelligence.	2		1	3	0
8	Different Guidelines to report research Different guidelines like CARE, CONSORT, ARRIVE etc.	2		0	2	0
9	Intellectual Property Right (IPR)/Patent/ TKDL Importance Intellectual Property Right (IPR)/Patent/ TKDL	2		1	0	0
10	Research Critiquing Different steps involved in critiquing research works	2		1	2	0
11	Introduction to Medical statistics 1. Objectives 2. Types (Descriptive and Inferential) 3. Scope and Relevance pertaining to Ayurveda	2	20	1	1	0
12	Data 1. Concept of Data in Medical Statistics 2. Sources of Data.	2		1	2	0

	3. Types of Data: Quantitative and Qualitative (categorical), Discrete and continuous. 4. Types of Scales: ordinal, nominal, interval and ratio scale.	
13	Basic statistical terms 1. Population 2. Sample and sampling 3. Variable (Dependent and Intendent) 4. Attributes	2
14	Collection and Presentation of Data 1. Types of Data Collection (Primary and Secondary) 2. Types of Presentation of data (Textual, Tabular and Graphical)	2
15	Measures of Central Tendency 1. Arithmetic Mean 2. Median 3. Mode 4. Qualities of Good measure of central tendency	2
16	Measures of Deviation/Dispersion/Variability 1. Range 2. Quartile deviation 3. Mean deviation 4. Standard deviation 5. Variance and Co-efficient of Variation. 6. Standard error 7. Qualities of good measure of variability	2
17	Probability 1. Fundamental of Probability 2. Normal Distribution Curve and its properties	2
18	Hypothesis and Test of Significance Hypothesis and Test of Significance	2
19	Parametric and non-parametric tests Parametric and non-parametric tests	2

1	1	0
2	4	0
1	2	0
1	4	0
1	3	0
1	3	0
1	2	0

20	Concept of Co-relation and Regression Explain Co-relation and Regression	2		1	1	0
21	Commonly used Statistically software Commonly used Statistically software	2		0	2	0
Total Marks			50	25	50	0

Table 3 : Learning objectives of Course

Paper 1 (RM-MS)										
A3 Course outcome	B3 Learning Objective (At the end of the session, the students should be able to)	C3 Domain/sub	D3 MK / DK / NK	E3 Level	F3 T-L method	G3 Assessment	H3 Assessment Type	I3 Term	K3 Integration	L3 Type
Topic 1 Introduction to Research (LH :1 NLHT: 0 NLHP: 0)										
A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1	Define Research and Research objectivesDescribe Scope of research in ayurveda. Define Evidence based and Integrative medicine	CC	MK	KH	L&PPT	T-OBT,QZ ,PUZ	S	II	-	LH
Non Lecture Hour Theory										
S.No	Name of Activity	Description of Theory Activity								
Non Lecture Hour Practical										
S.No	Name of Practical	Description of Practical Activity								
Topic 2 Historical developments in research (LH :0 NLHT: 1 NLHP: 0)										
A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 5	Present historical development of Contemporary research.Identify evidences of research in ayurveda classical literature.	PSY-GUD	MK	KH	BS,L&GD,IBL ,TBL,DIS	M-CHT,QZ ,CL-PR,DEB	S	II	H-Samhita	NLHT2.1
Non Lecture Hour Theory										
S.No	Name of Activity	Description of Theory Activity								

NLHT 2.1	Historical developments in research	Students (5-10) are divided into groups (5-10) They are given task to collect evidences on milestones of researches conducted like Nazi camp, Thalidomide story, syphilis story and also collect evidences of research process in ayurveda classical texts. Later each group is given 5 minutes to present the collected literature and how the different issues were addressed in research methodology.
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 3 Research Types (LH :2 NLHT: 2 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 2	Explain Primary and Secondary research and differentiate between them	CC	MK	KH	L&GD	T-OBT	S	II	-	LH
CO 1,CO 2	Explain Basic, Applied and Translational Research and differentiate among them.	CC	MK	K	L&PPT	T-OBT	S	II	-	LH
CO 1,CO 2	Define Qualitative, Quantitative and Mixed Research and differentiate among them	CC	MK	K	L&PPT	T-OBT	S	II	-	LH
CO 1,CO 2	Define Observational and Interventional studies and differentiate between them	CC	MK	K	L&GD	T-OBT	S	II	-	LH
CO 1,CO 2	Describe Descriptive and Analytical studies and differentiate between them	CC	MK	K	L&PPT	T-OBT	S	II	-	LH

CO 1,CO 2	Describe and differentiate between primary, secondary, descriptive and Analytical research studies.Explain and Differentiate between Basic, Applied and Translational Research	PSY- GUD	MK	KH	CBL,BS ,PBL	PRN,S- LAQ	S	II	-	NLHT3.1
CO 1,CO 2	Illustrate and differentiate between Qualitative, Quantitative and Mixed ResearchDefine Observational and Interventional studies and differentiate between them	PSY- GUD	MK	KH	CBL,BS ,PBL,DI S,PER	S-LAQ,CL- PR,PRN	S	II	-	NLHT3.2

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 3.1	Different Research types Part I	Requirements: A set of cards or case studies with short descriptions of various research studies (some primary, some secondary, some descriptive, some analytical, basic, applied, and translational research.) are archived and used for NHL. 1 hour Activity: 1. Divide students into small groups. 2. Distribute the cards/cases randomly. 3. Ask each group to classify the research study given to them which may be either primary, secondary, descriptive, analytical, basic, applied and translational research. 4. After categorizing, the groups explain their reasoning behind the classification. 5. Then later teacher facilitates a discussion to clarify any misunderstandings and to reinforce key concepts
NLHT 3.2	Research Types Part II	Requirements: A set of case studies with short description or synopsis which have Qualitative, Quantitate, observational and interventional studies are archived and used as study material. 1 hour Activity: 1. Divide students into small groups. 2. Distribute the cards/cases randomly.

		3. Ask each group to classify the research study given to them which may be either Qualitative, Quantitate, observational and interventional studies. 4. After categorizing, the groups explain their reasoning behind the classification. 5. Then later teacher facilitates a discussion to clarify any misunderstandings and to reinforce key concepts
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 4 Research Ethics (LH :1 NLHT: 1 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 5	Explain the need and significance of ethics in research.	AFT-VAL	MK	KH	L&GD, DIS	INT,CBA	S	II	-	LH
CO 5	Explain the role of IHEC/IEC and IAEC in research	AFT-VAL	DK	K	FC,BS, L&PPT	T-OBT,T-CS	S	II	-	LH
CO 5	Appraise the role and significance of ethics in publication	AFT-RES	MK	KH	BS,L&GD,DIS	T-CS,DEB, CL-PR	S	II	-	LH
CO 5	Explain the need and significance of ethics in research along with structure of Institutional Human and Animal ethical committee.	AFT-VAL	DK	KH	TBL,RP ,DIS,PB L,PSM	PRN,P-MOD,SBA	S	II	-	NLHT4.1

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 4.1	Ethics Committe Functioning	1 hour Activity: 1. Present a real or hypothetical case study involving ethical dilemmas in animal or human research.

		2. The scenario should focus on a situation where ethical approval is needed (e.g., using animals for a new study or involving human participants). 3. Divide participants into small groups (10 each group) and ask them to discuss the ethical challenges, the role of IAEC/IHEC in addressing these issues, and how they would resolve the situation. 4. Each group discusses and decides whether the research should be approved, ensuring the ethical principles (such as respect for autonomy, beneficence, non-maleficence, and justice) are considered.
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 5 Research Designs and terminologies (LH :4 NLHT: 8 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 2	Describe Case Reports	CC	MK	KH	L&PPT	T-CS	S	II	-	LH
CO 1,CO 2	Explain Case series	CC	DK	K	L&PPT	T-CS,PA	S	II	-	LH
CO 1,CO 2	Describe Cross sectional study	CC	MK	K	L&PPT ,DIS	T-CS,QZ	S	II	-	LH
CO 1,CO 2	Explain COHORT study	CC	DK	K	DIS,BL, L&PPT	T-OBT,QZ	S	II	-	LH

CO 1,CO 2	Describe Case Control study	CC	DK	K	BS,L&P PT ,DIS	T-CS,PA	S	II	-	LH
CO 1,CO 2	Describe Randomized Controlled Trial	CC	MK	KH	DIS,PL, BS,L&P PT	T-CS,PA,S- LAQ	S	II	-	LH
CO 1,CO 2	Define and identify various steps of Literary research Narrative review, systematic review and meta-analysis and identify the difference among them	CC	NK	K	TBL,DI S,BS,L &PPT	PA,QZ ,CL- PR,T-CS	S	II	-	LH
CO 1,CO 2	Explain Various pre-clinical methods and their utility	CC	NK	K	D-M,BL ,L_VC, BS	QZ ,P- MOD,PA	S	II	-	LH
CO 1,CO 2	Define various terms related to research designs	CC	MK	KH	L&PPT ,DIS	PA,PUZ,Q Z ,T-CS	S	II	-	LH
CO 1,CO 2	Illustrate Literature review under peer learning.	CAP	MK	KH	TBL,BS ,PL,DIS	PA,T- CS,COM	S	II	-	NLHT5.1
CO 1,CO 2	Present differences between case report and case series.Describe and differentiate between cross sectional, longitudinal, cohort and case control studies.	PSY- GUD	MK	KH	TBL,PE R,PBL, BL	S-LAQ,PR N,CL-PR	S	II	-	NLHT5.2
CO 1,CO 2	Describe Randomized clinical trial and terminologies related to it (Randomization, matching, blinding and bias)	PSY- GUD	MK	KH	PBL,TB L,BL,B S,PL	COM,CL-P R,PRN,PA, P-MOD	S	II	-	NLHT5.3
CO 1,CO	Describe preclinical research methods (In-silico, In-vitro, In situ and In-vivo).	PSY- GUD	DK	K	D-M,PE R,PL,F	P-MOD,PA ,PRN	S	II	-	NLHT5.4

2					V					
Non Lecture Hour Theory										
S.No	Name of Activity	Description of Theory Activity								
NLHT 5.1	Literary research	One hour peer learning for Literary research and review with different examples related to concepts of ayurveda.								
NLHT 5.2	Research designs	2-hour Group activity. Preparation: Prepare a set of cards or slips with scenarios of different medical research questions (e.g., “Does smoking increase the risk of lung cancer?” or “What is the prevalence of hypertension in a population of 40-year-olds?”). Instructions: Divide the students into four-five small groups. Assign each group one study type (cross-sectional, longitudinal, cohort, or case-control). Each group will be given a set of research scenarios (with some overlapping between study types). Their task is to categorize each scenario into the correct study type based on the description. After 20 minutes, ask each group to present their study type and rationale for categorizing the research scenarios. Debrief: Clarify the key points for each study design, emphasizing differences such as the study direction (retrospective vs. prospective), timeframes, and data types (exposure vs. outcome). Discuss how the study design choice influences the type of questions they can answer (e.g., prevalence, incidence, risk factors).								
NLHT 5.3	Randomized clinical trial and terminologies related to it	2-hour group activity on Randomized control studies. Preparation: Create a list of clinical questions (e.g., effectiveness of a new drug, surgical technique, or lifestyle intervention) that could be investigated via RCT. Divide students into small groups (4-5 students per group). Each group is assigned a clinical question and tasked with designing an RCT to answer it. Steps:								

		• Identify the Research Question: What hypothesis are they testing? (e.g., “Does a new drug reduce blood pressure more effectively than the standard treatment?”) • Define the Population: Who is the target population (e.g., adults with hypertension)? • Randomization Strategy: How will they randomize participants? Will it be simple randomization, block randomization, or stratified randomization? • Intervention and Control Groups: What will be in the intervention group (e.g., new drug) and the control group (e.g., standard treatment or placebo)? • Blinding: Will the study be single-blind, double-blind, or open-label? How will they ensure blinding to reduce bias? • Outcome Measures: What primary and secondary outcomes will they measure (e.g., blood pressure reduction, adverse effects)? • Sample Size and Power: How will they estimate sample size to ensure the study has adequate power? • Ethical Considerations: How will they handle patient consent, potential harms, and ethical concerns? • After 20 minutes of discussion, each group presents their RCT design to the class (5 minutes per group). Debrief: Discuss strengths and weaknesses of the different designs, and facilitate a conversation about randomization, blinding, and potential biases.
NLHT 5.4	Preclinical methods in research	3-hour field visit to orient on Preclinical methods in research. Visit to Research laboratory or academic research institute with preclinical research facilities. After visiting all stations in research facility, bring the students together for a discussion led by a researcher or facilitator. Review each preclinical method and how they complement each other in research. Open the floor to questions about the different methods, their applications, challenges, and ethical considerations. Discuss any real-world case studies where these methods have led to breakthroughs in drug development or disease understanding. Ask students to reflect on which method they found most interesting or challenging and why

Non Lecture Hour Practical											
S.No	Name of Practical		Description of Practical Activity								
Topic 6 Research process (LH :3 NLHT: 6 NLHP: 0)											
A3	B3		C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 2,CO 3	Describe the process for Selection of topic		CC	MK	KH	L&PPT ,BS,DIS	T-CS,PA	S	II	-	LH
CO 3	Access and explain the Literature search in medical database		PSY-MEC	MK	KH	FC,L&GD,BL	T-CS,CL-PR,PA	S	II	-	LH
CO 1,CO 2	Formulate the Hypothesis and Objectives		CC	MK	KH	DIS,BS, L&GD	PA,T-CS	S	II	-	LH
CO 1,CO 2	Select the appropriate materials and methodologies required in research process.		PSY-GUD	MK	KH	FC,L&GD,BL	QZ ,PA,S-LAQ,T-CS	S	II	-	LH
CO 2,CO 4	Explain collection, analysis and Interpretation of data.		CC	MK	K	BS,L&GD,DIS	T-CS,S-LAQ,QZ	S	II	-	LH
CO 2,CO 5	Justiy Research conclusions		CC	MK	K	FC,BL, L&GD	PA,T-CS	S	II	-	LH
CO 1,CO 2,CO	Discuss steps of Reporting of Research (IMRAD)		CAP	MK	KH	L&GD, DIS,BS	PA,CL-PR, S-LAQ,T-CS,QZ	S	II	-	LH

5										
CO 1, CO 2, CO 5	Identify the research topic, research problem and appraise review of literature. Formulate research hypothesis and objectives.	PSY-GUD	DK	SH	PBL, L&GD, PER, BS, DIS	CBA, CL-PR, S-LAQ, T-CS	S	II	-	NLHT6.1
CO 1, CO 2	Select the appropriate materials and methods for research study.	PSY-GUD	MK	SH	PBL, TBL, DIS, FC, L&GD	T-CS, PA, QZ, CL-PR, S-LAQ	S	II	-	NLHT6.2

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 6.1	Research process: Research question and Hypothesis	Research topic, problem and hypothesis formulation (3-hour activity) 1. Divide the students into four-five small groups. 2. Each group will brainstorm possible research topics in a medical field of their choice (Vatavyadhi, Madhumeha, Pandu, Bhadirya, srotas etc.) 3. Guide the students to ensure their chosen topic is relevant, specific, and manageable for undergraduate research. 4. Ask each group to define a research problem based on the topic they selected. 5. Example: If the topic is "prameha", the research problem might be, "What are the present day nidana ahara and vihara in causing prameha in urban areas?" 6. Give each group a sample abstract or a portion of a research paper (this can be a real article or a fictional example) or 7. Alternatively, ask the students to find a research article relevant to their topic using online databases. 8. Ask students to Identify key findings, methods, and conclusions from the literature. Assess the gaps or limitations in the existing research. Discuss how this literature review informs their own research problem.

		9. Guide the students to frame the research question and hypothesis for respective condition chosen by them from the above activity.
NLHT 6.2	Research process: Materials and Methodology	Planning and conducting the research (3-hour activity) Start with a brief discussion of the importance of selecting appropriate materials and methods in research. Materials: Refers to the tools, instruments, or resources required for the study (e.g., surveys, medical equipment, software). Methods: Refers to the overall approach to collecting and analysing data (e.g., qualitative vs. quantitative methods, observational studies, experimental designs). Group Formation: Divide students into groups of 4–6. Research Topic and materials: Each group selects or is assigned a general research topic (e.g., hypertension in children, antibiotic resistance in hospital settings, mental health in medical students) and Formulating a Research Problem. Depending on their chosen topic and problem ask the groups to decide on the materials they will need 1. Surveys and Questionnaires: Tools for collecting self-reported data. 2. Medical Equipment: Devices like blood pressure cuffs, thermometers, glucose meters. 3. Software: Statistical tools (SPSS, R, Excel) or qualitative analysis software (NVivo). 4. Data Sources: Databases, medical records, or patient registries. 5. Ethical Considerations: Ensure that the materials selected are ethically sound (e.g., consent forms, patient confidentiality). Research design: Ask each group to decide on the data collection methods that best suit their research problem. Guide the groups to choose between quantitative or qualitative methods based on their research problem and objectives. Study Population: Have the groups identify their target population and sampling method. Discuss factors like sample size, inclusion/exclusion criteria, and sampling bias. Data Analysis Approach: Ask the groups to select the statistical or qualitative analysis techniques they

		will use to interpret their data.										
Non Lecture Hour Practical												
S.No		Name of Practical		Description of Practical Activity								
Topic 7 Different Database, portals and Artificial Intelligence. (LH :1 NLHT: 3 NLHP: 0)												
A3	B3			C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 3	Illustrate use of different Research portals, database (DHARA, AYUSH Research Portal, PubMed, SCOPUS, UGC-CARE, Web of Science, etc) and explore Artificial Intelligence in research.			CC	MK	KH	L_VC,D IS	PA,S- LAQ,QZ	S	II	-	LH
CO 3	Demonstrate use of Research portals, database (DHARA, AYUSH Research Portal, PubMed, SCOPUS, UGC-CARE, Web of Science, etc) and Artificial intelligence in ayurveda			PSY- GUD	DK	KH	TBL,FC ,L&GD, BS,W	QZ ,DOAP, PA,CL-PR	S	II	-	NLHT7.1
Non Lecture Hour Theory												
S.No		Name of Activity		Description of Theory Activity								
NLHT 7.1		Demonstrate use of Research portals, database and Artificial intelligence in ayurveda		Demonstration of Databases and Research Portals (2 hours) • PubMed: Introduction to searching for medical literature, using MeSH (Medical Subject Headings) terms, and filters. • Cochrane Library: Discuss systematic reviews, meta-analyses, and evidence-based medicine. • Google Scholar: Overview of how to search academic articles and set up alerts for ongoing research. • ClinicalTrials.gov: Discuss how to access information about ongoing clinical trials and their results. Demonstration of AI for Diagnostics (1 hour)								

		• Show how AI is being used to detect diseases from medical imaging or patient data (e.g., AI-assisted dermatology tools for skin cancer detection). • Chatbots and Virtual Assistants: Introduce AI-powered chatbots (e.g., Babylon Health, Your.MD) that provide preliminary diagnoses or health advice. Divide the students into small groups (3-4 students per group). Assign each group a research topic (e.g., "Antibiotic resistance in hospitals", "AI in diagnosing cancer", "Mental health in medical students"). Prepare a brief presentation (5-10 minutes) on what they found, the usefulness of the resources, and any challenges they encountered.
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 8 Different Guidelines to report research (LH :0 NLHT: 2 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 3	Differentiate various guidelines to report researchs like CARE, PRISMA, ARRIVE, CONSORT, STROBE.	CC	DK	KH	L_VC	CHK,QZ ,CL-PR,PA	S	II	-	LH
CO 3	Recommend specific guidlines for various research studies	PSY-GUD	DK	KH	BL,L_V C,FC,T BL,LS	S-LAQ,P-I D,CL-PR,P RN,CHK	S	II	-	NLHT8.1

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 8.1	Different Guidelines to report research	Introduce the different reporting guidelines, focusing on their purposes and key components (e.g.,

		CONSORT for clinical trials, STROBE for observational studies, PRISMA for systematic reviews, CARE for case reports). Divide students into small groups (10-15 students per group). 1. Assign each group a specific research study (either real or hypothetical) and provide them with the corresponding guideline checklist (e.g., CONSORT for clinical trial studies). 2. Ask the groups to review the study using the reporting guideline checklist, identifying elements of the research that are missing or not clearly reported. 3. Groups should note their findings on a whiteboard or in a shared document. 4. After the review, each group presents their findings, focusing on the areas where the study complied with the reporting guidelines and where it fell short. 5. Ask students to reflect on the activity and share any insights they gained about the importance of adhering to research reporting guidelines.
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 9 Intellectual Property Right (IPR)/Patent/ TKDL (LH :1 NLHT: 0 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 3,CO 5	Explain importance and different aspects of Intellectual property Rights/Patents and TKDL	AFT- VAL	NK	KH	BS,I& GD,DIS ,PBL	PRN,CL- PR,PA,QZ	S	II	-	LH

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 10 Research Critiquing (LH :1 NLHT: 2 NLHP: 0)										
A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 5	Explain Research critiquing and identify various steps involved in critiquing	CC	DK	K	L&PPT	CL-PR,T-CS,QZ	S	II	-	LH
CO 5	Illustrate Research critiquing and identify various steps involved in critiquing	PSY-GUD	DK	KH	FC,TBL ,L&GD, BL,CBL	CL-PR,QZ ,PRN	S	II	-	NLHT10.1

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 10.1	Research Critiquing	Select 3-4 research papers related to the topic at hand. Ensure these papers have a variety of strengths and weaknesses for discussion. Create critique sheets that participants can fill out for each study. Include questions like: What is the main research question or hypothesis, what are the key findings, what are the strengths of the study, what are the weaknesses or limitations of the study, how could the study be improved? Then divide participants into groups (ideally 10-15 people per group). If the group is large, you can have multiple sets of critique sheets and rotate the groups. Assign each group one research paper to start with. They'll spend 20-30 minutes reading the paper and completing the critique sheet. After 30 minutes, have each group rotate to the next research paper. They should review the critique sheet filled out by the previous group, read the paper again (or parts of it), and add any additional comments, thoughts, or suggestions. Repeat the process until each group has reviewed all the papers (1 hour). Final Reflection (30 minutes): Once the above activity is complete, come together as a whole group to discuss insights and the overall critiques. What were common strengths and weaknesses across the studies? How can these insights be applied to future research?

Non Lecture Hour Practical											
S.No	Name of Practical		Description of Practical Activity								
Topic 11 Introduction to Medical statistics (LH :1 NLHT: 1 NLHP: 0)											
A3	B3		C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1	Define Statistics		CK	MK	K	DIS,L&PPT	Log book	S	II	-	LH
CO 1	Explain Objectives of Medical Statistics		CAP	MK	K	L&GD, L&PPT	Log book	S	II	-	LH
CO 1,CO 4	Differentiate between Descriptive and Inferential Statistics		CAP	MK	K	L&GD, PBL,TB L	Log book	S	II	-	LH
CO 1,CO 4	Explain Scope and Relevance of Medical Statistics in Ayurveda		CC	MK	K	L&GD, BS,L&PPT ,TBL	Log book	S	II	-	LH
CO 1,CO 4	Differentiate between Descriptive and Inferential Statistics		CAP	MK	KH	FC,L&PPT	Log book	S	II	-	NLHT11.1
CO 1	Explain Evidence Based Medicine		CK	DK	K	FC,IBL, L&PPT	PRN,INT	S	II	-	LH
CO 1	Describe Integrative Medicine		CK	DK	K	FC,DIS, L&PPT	PRN	S	II	-	LH
Non Lecture Hour Theory											
S.No	Name of Activity		Description of Theory Activity								

NLHT 11.1	Differentiating descriptive and inferential statistics	Demonstration by teacher: Using a simple data set the teacher demonstrates and clarifies the concepts of descriptive and inferential statistics. Hands-on training: The students are grouped into three or four or more, with a maximum of 20 students in each group. Then, they are asked to collect basic information regarding each student in their respective groups, like name, native place, height, and weight, and record the details in writing. The teacher helps the students to summarize the data using descriptive statistics and infer from the collected information. The students are to present their findings in the class. Conclusion and summarization: The teacher then discusses the key aspects and provides inputs for further application of the concepts.
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity								
Topic 12 Data (LH :1 NLHT: 2 NLHP: 0)										
A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1	Define Data	CK	MK	K	PBL,DI S,L&PP T	Log book	S	II	-	LH
CO 1,CO 4	Describe and classify different types of Data [Quantitative, Qualitative (categorical), Discrete and Continuous	CAP	MK	K	TBL,L &PPT ,DIS,FC	Log book	S	II	-	LH
CO 1,CO 4	Define and classify different types of Scales: Ordinal, Nominal, Interval, Ratio	CAP	MK	K	PBL,L& PPT ,DIS,IB L	Log book	S	II	-	LH
CO 1,CO	Demonstrate types and sets of Data	PSY-GUD	MK	SH	L&PPT ,PBL,T	Log book	S	II	-	NLHT12.1

4					BL,DIS					
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Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 12.1	Data types and scales	Demonstration by teacher: Using a simple data set, the teacher demonstrates various data types and scales. Hands-on training: The students are grouped into three or four groups, with a maximum of 20 students in each group. The teacher then presents a data set that contains different types of data. The students are then allowed to discuss and determine the correct data types and scales for the given data. The activity is repeated with two, three, or more data sets. Conclusion and summarization: The teacher then discusses the key aspects of data classification and measuring scales.

Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 13 Basic statistical terms (LH :1 NLHT: 1 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1	Define Population with examples	CC	MK	K	L&PPT ,BS	Log book	S	II	-	LH
CO 1,CO 4	Define Sample and basic understanding of Sampling and sampling methods. Differentiate between Population and sample	CAP	MK	K	DIS,L& PPT ,T BL,PBL	Log book	S	II	-	LH
CO 1,CO 4	Define Variable and differentiate various types of variables	CAP	MK	K	TBL,IB L,L&PP T	Log book	S	II	-	LH
CO	Define Attributes and differentiate various types of attributes	CAP	MK	K	TBL,L	Log book	S	II	-	LH

1,CO 4					&PPT ,PBL					
CO 1,CO 4	Demonstrate Basic Statistical terms.	PSY- GUD	MK	SH	L&PPT ,D,TBL, DIS,PB L	Log book	S	II	-	NLHT13.1

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 13.1	Statistical terms	Demonstration by teacher: Using scientific articles the teacher identifies the population, sample, variables and attributes appearing in the study. Hands-on training: The students are grouped into three or four groups, with a maximum of 20 students in each group. The teacher gives two or three scientific articles to each group. The students in the groups discuss, identify, and record the population, sample, variables, and attributes appearing in each article and present the findings in class. Conclusion and summarization: The teacher then concludes and summarizes key aspects and provides additional inputs for improvisation.

Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 14 Collection and Presentation of Data (LH :2 NLHT: 4 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 4	Differentiate types of Data [Primary, Secondary] and understand basic data collection methods.	CAP	MK	K	TBL,PS M,FC,P BL	Log book	S	II	-	LH
CO	Demonstrate different types of Presentation of data (Textual,	PSY-	MK	SH	L&PPT	Log book	S	II	-	LH

1,CO 4	Tabular and Graphical)	MEC			,PSM,T BL,PBL ,D					
CO 1,CO 4	Demonstrate Collection and Presentation of Data.	PSY- MEC	MK	SH	L&PPT ,PBL,T BL,D	Log book	S	II	-	NLHT14.1
CO 1,CO 4	Demonstrate Collection and Presentation of Data.	PSY- MEC	MK	SH	PBL,D, TBL,PS M,L&P PT	Log book	S	II	-	NLHT14.2

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 14.1	Data collection	Demonstration by teacher: The teacher elaborates on practical aspects of data collection methods using various patient scenarios. Hands-on training: The students are grouped into three or four groups, with a maximum of 20 students in each group. Each group collects basic demographic, anthropometric, and clinical data of a minimum of 20 patients using specific data collection methods and records the data with the teacher's help within the allocated time. Conclusion and summarization: The teacher then concludes and summarizes the key aspects of data collection and their applicability in different scenarios.
NLHT 14.2	Data presentation	Demonstration by teacher: The teacher demonstrates various methods of data presentation, highlighting the key components. Hands-on training: The student groups summarize the data collected from activity 4.1 into tables and then to appropriate graphs. Each group then present the data to the class. Conclusion and summarization: The teacher then concludes and summarizes the key aspects of data presentation and important aspects to be considered while presenting the data.

Non Lecture Hour Practical												
S.No		Name of Practical		Description of Practical Activity								
Topic 15 Measures of Central Tendency (LH :1 NLHT: 2 NLHP: 0)												
A3	B3			C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 4	Define Measures of Central Tendency and Arithmetic Mean.			CC	MK	KH	TBL,L &PPT , PBL,FC ,PSM	Log book	S	II	-	LH
CO 1,CO 4	Define Mean			CC	MK	KH	DIS,PB L,L&PP T	Log book	S	II	-	LH
CO 1,CO 4	Define Median			CC	MK	KH	L&PPT ,PSM,P BL	Log book	S	II	-	LH
CO 1,CO 4	Define Mode			CC	MK	KH	L&PPT ,PBL,PS M	Log book	S	II	-	LH
CO 1,CO 4	Explain the Qualities of Good measure of tendency			CC	MK	KH	L&GD, L&PPT ,TBL	Log book	S	II	-	LH
CO 1,CO 4	Calculate Measures of Central Tendency.			PSY-GUD	MK	SH	L&PPT ,DIS,PS M,TBL, PBL	Log book	S	II	-	NLHT15.1
Non Lecture Hour Theory												

S.No	Name of Activity	Description of Theory Activity
NLHT 15.1	Calculating measures of central tendency	Demonstration by teacher: Using specific data sets the teacher demonstrates how to calculate mean, median and mode from the given data. Hands-on training: The students are given three or four data sets to calculate different measures of central tendency from the data. Conclusion and summarization: The teacher discusses the importance and applicability of various measures of central tendency and describes a good measure of central tendency.

Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 16 Measures of Deviation/Dispersion/Variability (LH :1 NLHT: 4 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 4	Define Measures of Deviation/ Dispersion / Variability and Range.	CC	MK	KH	TBL,L &PPT , PSM,DI S,PBL	Log book	S	II	-	LH
CO 1,CO 4	Define Quartile deviation.	CC	MK	KH	L&PPT ,DIS,TB L,PBL, PSM	Log book	S	II	-	LH
CO 1,CO 4	Define Mean deviation.	CC	MK	KH	DIS,PB L,TBL, PSM,L &PPT	Log book	S	II	-	LH
CO 1,CO 4	Define Standard deviation.	CC	MK	KH	PBL,DI S,L&PP	Log book	S	II	-	LH

4					T ,TBL, PSM					
CO 1,CO 4	Define Variance and Co-efficient of Variation.	CC	MK	KH	TBL,L &PPT , DIS,PB L	Log book	S	II	-	LH
CO 1,CO 4	Define Standard Error	CC	NK	KH	PBL,L& PPT ,PS M,TBL	Log book	S	II	-	LH
CO 1,CO 4	Explain the Qualities of Good measure of variability	CC	MK	KH	TBL,L &PPT , PSM,PB L,DIS	Log book	S	II	-	LH
CO 1,CO 4	Calculate Measures of Deviation / Dispersion / Variability.	PSY- GUD	MK	SH	D,TBL, L&PPT ,BS,PB L	Log book	S	II	-	NLHT16.1
CO 1,CO 4	Calculate Measures of Deviation / Dispersion / Variability.	PSY- GUD	MK	SH	L&PPT ,D,PSM, PBL,TB L	Log book	S	II	-	NLHT16.2

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 16.1	Calculating measures of central tendency - 01	Demonstration by teacher: Using specific data sets the teacher demonstrates how to calculate range, mean deviation and standard deviation from the given data. Hands-on training: The students are given three or four data sets to calculate the Range, Mean Deviation, and standard deviation from the data. Conclusion and summarization: The teacher discusses

		the data sets and explains the difference between range, mean deviation, and standard deviation.
NLHT 16.2	Calculating measures of central tendency - 02	Demonstration by teacher: Using the same data sets from activity 6.1 the teacher demonstrates how to calculate variance and coefficient variation from the given data. Hands-on training: The students are then given three or four data sets to calculate variance and coefficient variation from the data. Conclusion and summarization: The teacher discusses the data sets and explains variance and coefficient of variation and their applicability. Further, the teacher elaborates on good measures of dispersion.

Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 17 Probability (LH :1 NLHT: 3 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1	Explain Probability	CC	MK	K	D-M,PL ,L&PPT ,IBL	Log book	S	II	-	LH
CO 1,CO 4	Define Normal Distribution Curve and understand its variations	CC	MK	KH	PL,L&P PT ,DIS ,BS,ML	Log book	S	II	-	LH
CO 1,CO 4	Calculate Probability and Normal Distribution.	PSY-GUD	MK	SH	DIS,D,L &PPT ,I BL,PBL	Log book	S	II	-	NLHT17.1

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 17.1	Normal distribution and probability	Demonstration by teacher: The teacher demonstrates the normal distribution curve and its variations,

		like skewness and kurtosis, using different data. The teacher also demonstrates probability based on the normal distribution. Hands on training: The students are given tabulated data to develop normal distribution curves. Then, they conduct probability predictions from the curve. Conclusion and summarization: The teacher discusses the findings and clarifies doubts.
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity								
Topic 18 Hypothesis and Test of Significance (LH :1 NLHT: 3 NLHP: 0)										
A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 4	Explain Hypothesis	CC	MK	K	L&PPT ,DIS	Log book	S	II	-	LH
CO 1,CO 4	Explain Test of significance	CC	MK	KH	BS,DIS, L&GD	Log book	S	II	-	LH
CO 1,CO 4	Discuss Hypothesis and Test of Significance.	CAP	MK	SH	L&PPT ,PSM,T BL,PBL ,D	Log book	S	II	-	NLHT18.1
CO 1,CO 4	Discuss Hypothesis and Test of Significance.	CAP	MK	SH	D,L&PP T ,TBL, DIS	Log book	S	II	-	NLHT18.2

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
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NLHT 18.1	Hypothesis	Demonstration by teacher: The teacher demonstrates systematic development of a hypothesis from a research problem. Hands-on training: The students are grouped into three or four groups, with a maximum of 20 students in each group. Each group develop hypotheses from three or four given research problems. Then, they present the hypotheses in class. Conclusion and summarization: The teacher discusses various hypotheses developed by the groups and summarizes the critical aspects.
NLHT 18.2	Testing of significance	Demonstration by teacher: The teacher demonstrates the steps involved in testing a hypothesis using data from different scientific articles. Hands-on training: The students' groups are then given three or four articles to identify and record the steps of hypothesis testing in them. Then, they will present the data in class. Conclusion and summarization: The teacher concludes with significant points regarding the testing of the hypothesis.

Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 19 Parametric and non-parametric tests (LH :1 NLHT: 2 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 4	Explain and differentiate Parametric and Non-parametric tests with examples	CC	MK	KH	L&GD, L&PPT,BS	Log book	S	II	-	LH
CO 1,CO 4	Discuss Parametric and Non-parametric tests	CAP	MK	KH	D,PBL, L&PPT,DIS	Log book	S	II	-	NLHT19.1

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 19.1	Understanding Parametric and Non-parametric tests	Demonstration by teacher: The teacher demonstrates the difference between parametric and nonparametric tests and introduces various parametric and nonparametric tests. Hands-on training: The teacher provides three or four scientific articles to the students in groups. The students discuss and understand the application of parametric or nonparametric tests, and they record their findings. Conclusion and summarization: The teacher concludes with major points regarding the applicability of parametric and nonparametric tests.

Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 20 Concept of Co-relation and Regression (LH :1 NLHT: 1 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 4	Explain Correlation and Regression	CC	MK	KH	L&PPT ,D,PBL	Log book	S	II	-	LH
CO 1,CO 4	Correlation and regression	CC	DK	KH	TBL,L &PPT ,D	Log book	S	II	-	NLHT20.1

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 20.1	Undersanding correlation and regression	Demonstration by teacher: The teacher demonstrates various features of correlation and regression using data from scientific literature. Hands-on training: Students are given three data sets that utilize correlation and regression, and they understand various scenarios for their application.

		Conclusion and summarization: The teacher concludes with major points regarding correlation and regression and their applicability.
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Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Topic 21 Commonly used Statistically software (LH :0 NLHT: 2 NLHP: 0)

A3	B3	C3	D3	E3	F3	G3	H3	I3	K3	L3
CO 1,CO 4	Demonstrate different Software used for Statistical Analysis	CC	NK	KH	D,DIS,T UT,L& PPT	Log book	S	II	-	NLHT21.1

Non Lecture Hour Theory

S.No	Name of Activity	Description of Theory Activity
NLHT 21.1	Statistical software	Demonstration by teacher: The teacher introduces various statistical software and its features and demonstrates any of them by performing some simple statistical tests. Hands-on training: Students are allowed to review various statistical software, understand its features, and prepare a note. Conclusion and summarization: The teacher concludes with major points regarding statistical software and their applicability.

Non Lecture Hour Practical

S.No	Name of Practical	Description of Practical Activity
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Table 4 : NLHT Activity

(*Refer table 3 of similar activity number)

Activity No*	CO No	Activity details
2.1	CO 1,CO 5	Historical developments in research
3.1	CO 1,CO 2	Different Research types Part I
3.2	CO 1,CO 2	Research Types Part II
4.1	CO 5	Ethics Committe Functioning
5.1	CO 1,CO 2	Literary research
5.2	CO 1,CO 2	Research designs
5.3	CO 1,CO 2	Randomized clinical trial and terminologies related to it
5.4	CO 1,CO 2	Preclinical methods in research
6.1	CO 1,CO 2,CO 5	Research process: Research question and Hypothesis
6.2	CO 1,CO 2	Research process: Materials and Methodology
7.1	CO 3	Demonstrate use of Research portals, database and Artificial intelligence in ayurveda
8.1	CO 3	Different Guidelines to report research
10.1	CO 5	Research Critiquing
11.1	CO 1,CO 4	Differentiating descriptive and inferential statistics
12.1	CO 1,CO 4	Data types and scales
13.1	CO 1,CO 4	Statistical terms
14.1	CO 1,CO 4	Data presentation

14.2	CO 1,CO 4	Data collection
15.1	CO 1,CO 4	Calculating measures of central tendency
16.1	CO 1,CO 4	Calculating measures of central tendency - 01
16.2	CO 1,CO 4	Calculating measures of central tendency - 02
17.1	CO 1,CO 4	Normal distribution and probability
18.1	CO 1,CO 4	Hypothesis
18.2	CO 1,CO 4	Testing of significance
19.1	CO 1,CO 4	Understanding Parametric and Non-parametric tests
20.1	CO 1,CO 4	Understanding correlation and regression
21.1	CO 1,CO 4	Statistical software

Table 5 : List of Practicals

Not Applicable

Table 6 : Assessment Summary: Assessment is subdivided in A to H points**6 A : Number of Papers and Marks Distribution**

Subject Code	Papers	Theory	Practical/Clinical Assessment (-)					Grand Total
			Practical	Viva	Elective	IA	Sub Total	
AyUG-RM	1	50	-	-	-	-	-	50

6 B : Scheme of Assessment (Formative and Summative)

PROFESSIONAL COURSE	FORMATIVE ASSESSMENT			SUMMATIVE ASSESSMENT
	First Term (1-6 Months)	Second Term (7-12 Months)	Third Term (13-18 Months)	
Third	NA	NA	NA	UE**

PA: Periodical Assessment; **TT:** Term Test; **UE:** University Examinations; **NA:** Not Applicable.

******University Examination shall be on entire syllabus

6 C : Calculation Method for Internal assessment Marks

Not applicable

6 D : Evaluation Methods for Periodical Assessment

S. No.	Evaluation Methods
1.	Practical / Clinical Performance
2.	Viva Voce, MCQs, MEQ (Modified Essay Questions/Structured Questions)
3.	Open Book Test (Problem Based)
4.	Summary Writing (Research Papers/ Samhitas)
5.	Class Presentations; Work Book Maintenance
6.	Problem Based Assignment
7.	Objective Structured Clinical Examination (OSCE), Objective Structured Practical Examination (OPSE), Mini Clinical Evaluation Exercise (Mini-CEX), Direct Observation of Procedures (DOP), Case Based Discussion (CBD)
8.	Extra-curricular Activities, (Social Work, Public Awareness, Surveillance Activities, Sports or Other Activities which may be decided by the department).
9.	Small Project
10.	Activities Indicated in Table 3 - Column G3 as per Indicated I, II or III term in column I3.

6 E : Question Paper Pattern

III PROFESSIONAL BAMS EXAMINATIONS

AyUG-RM

PAPER-I

Time: 1.5 Hours Maximum Marks: 50

INSTRUCTIONS: All questions compulsory

		Number of Questions	Marks per question	Total Marks
Q 1	MULTIPLE CHOICE QUESTIONS (MCQ)	10	1	10
Q 2	SHORT ANSWER QUESTIONS (SAQ)	4	5	20
Q 3	LONG ANSWER QUESTIONS (LAQ)	2	10	20
				50

6 F : Distribution of theory examination

Paper 1 (RM-MS)					
Sr. No	A List of Topics	B Marks	MCQ	SAQ	LAQ
1	Introduction to Research	30	No	Yes	No
2	Historical developments in research		No	Yes	No
3	Research Types		Yes	Yes	Yes
4	Research Ethics		Yes	Yes	No
5	Research Designs and terminologies		Yes	No	Yes
6	Research process		Yes	No	Yes
7	Different Database, portals and Artificial Intelligence.		Yes	Yes	No
8	Different Guidelines to report research		Yes	Yes	No
9	Intellectual Property Right (IPR)/Patent/ TKDL		Yes	No	No
10	Research Critiquing		Yes	No	No
11	Introduction to Medical statistics	20	Yes	No	No
12	Data		Yes	No	No
13	Basic statistical terms		Yes	No	No
14	Collection and Presentation of Data		Yes	Yes	Yes
15	Measures of Central Tendency		No	No	Yes
16	Measures of Deviation/Dispersion/Variability		No	No	Yes
17	Probability		No	Yes	No
18	Hypothesis and Test of Significance		Yes	No	No
19	Parametric and non-parametric tests		Yes	Yes	No
20	Concept of Co-relation and Regression		Yes	No	No
21	Commonly used Statistically software		Yes	No	No
Total Marks		50			

6 G : Instructions for UG Paper Setting & Blue print

1. All questions shall be compulsory.
2. Questions shall be drawn based on Table 6F, which provides the topic name, types of questions (MCQ(Multiple Choice Question), SAQ(Short Answer Question), LAQ(Long Answer Question)).
3. The marks assigned in Table 6F for each topic/group of topics shall be considered as the maximum allowable marks for that topic/group of topics.
4. Ensure that the total marks allocated per topic/group of topics do not exceed the limits specified in Table 6F.
5. Refer to Table 6F before setting the questions. Questions shall be framed only from topics where the type is marked as “YES”, and avoided if marked as “NO”.
6. Each 50-mark question paper of AyUG-RM shall contain:
 - 10 MCQs (5 Research Methodology + 5 Statistics)
 - 4 SAQs (3 Research Methodology + 1 Statistics)
 - 2 LAQs (1 Research Methodology + 1 Statistics)
7. MCQs:
 - Majority shall be drawn from the Must to Know part of the syllabus.
 - Questions from the Desirable to Know part of syllabus shall not exceed 2 for AyUG-RM.
 - Questions from the Nice to Know part of syllabus shall not exceed 1 for AyUG-RM.
8. SAQs:
 - Majority shall be drawn from the Must to Know part of the syllabus.
 - Questions from the Desirable to Know part of syllabus shall not exceed 1.
 - No questions shall be drawn from the Nice to Know part of syllabus.
 - SAQs shall assess understanding, application, and analysis, rather than simple recall.
9. LAQs:
 - All LAQs shall be drawn exclusively from the Must to Know part of the syllabus.
 - No questions shall be taken from the Desirable to Know or Nice to Know part of the syllabus.
10. Long Answer Questions shall be structured to assess higher cognitive abilities, such as application, analysis, and synthesis.
11. Follow the guidelines in User Manual III for framing MCQs, SAQs, and LAQs.

6 H : Distribution of Practical Exam

Not Applicable

References Books/ Resources

S.No	Resources
1	Gupta S P. Statistical methods. 46 th. Sultan Chand and sons; 2021
2	Itrat M, Khan TN, Radhika K. Research methodology and biostatistics. 2023.
3	Gupta SC. Fundamentals of statistics. 7th rev. & enl. edn. Gupta I, editor. Mumbai: Himalaya Publishing House; 2017.
4	Gupta SC, Kapoor VK. Fundamentals of mathematical statistics. 12th ed. New Delhi: Sultan Chand; 2020.
5	Agarwal BL. Basic statistics. Rev. 4th ed. New Delhi: New Age International; 2007.
6	Banerjee PK. Introduction to biostatistics: a textbook of biometry. 4th ed. New Delhi: S Chand; 2011.
7	Rao TB. Methods of biostatistics. 2nd ed. Hyderabad: Paras Medical Publisher; 2004.
8	Aslam M, Singh S. Research methodology & biostatistics in pharmacology. 1st ed. New Delhi: Academa Publishers; 2006.
9	Naseema C, Jibin VK. Research methodology in education and application of statistics. Delhi: Shipra Publications; 2011.
10	Chawla D, Sondhi N. Research methodology: concepts and cases. New Delhi: Vikas Publishing House; 2011.
11	Kothari CR. Research Methodology: Methods and Techniques. 2nd ed. Daryaganj; New Age International; 2004. 1 p.
12	Reporting guidelines EQUATOR Network
13	AYUSH RESEARCH PORTAL
14	Official website of Intellectual Property India

Syllabus Committee

Eminent Recourse Panel - Research Methodology & Medical-Statistics (UG)	
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Abbreviations

Domain		T L Method		Level		Assessment		Integration	
CK	Cognitive/Knowledge	L	Lecture	K	Know	T-CS	Theory case study	V-RS	V RS
CC	Cognitive/Comprehension	L&PPT	Lecture with PowerPoint presentation	KH	Knows how	T-OBT	Theory open book test	V-KS	V KS
CAP	Cognitive/Application	L&GD	Lecture & Group Discussion	SH	Shows how	P-VIVA	Practical Viva	H-KC	H KC
CAN	Cognitive/Analysis	L_VC	Lecture with Video clips	D	Does	P-REC	Practical Recitation	H-SH	H SH
CS	Cognitive/Synthesis	REC	Recitation			P-EXAM	Practical exam	H-PK	H PK
CE	Cognitive/Evaluation	SY	Symposium			PRN	Presentation	H-SHL	H SHL
PSY-SET	Psychomotor/Set	TUT	Tutorial			P-PRF	Practical Performance	H-SP	H SP
PSY-GUD	Psychomotor/Guided response	DIS	Discussions			P-SUR	Practical Survey	H-KB	H-KB
PSY-MEC	Psychomotor/Mechanism	BS	Brainstorming			P-EN	Practical enact	H-Samhita	H-Samhita
PSY-ADT	Psychomotor Adaptation	IBL	Inquiry-Based Learning			P-RP	Practical Role play	V-DG	V DG
PSY-ORG	Psychomotor/Origination	PBL	Problem-Based Learning			P-MOD	Practical Model	V-RN	V RN
AFT-REC	Affective/ Receiving	CBL	Case-Based Learning			P-POS	Practical Poster	V-RS	V RS
AFT-RES	Affective/Responding	PrBL	Project-Based Learning			P-CASE	Practical Case taking	V-AT	V AT
AFT-VAL	Affective/Valuing	TBL	Team-Based Learning			P-ID	Practical identification	V-SW	V SW
AFT-SET	Affective/Organization	TPW	Team Project Work			P-PS	Practical Problem solving		
AFT-CHR	Affective/ characterization	FC	Flipped Classroom			QZ	Quiz		
PSY-PER	Psychomotor/perception	BL	Blended Learning			PUZ	Puzzles		
PSY-COR	Psychomotor/ Complex Overt Response	EDU	Edutainment			CL-PR	Class Presentation		
		ML	Mobile Learning			DEB	Debate		
		ECE	Early Clinical Exposure			WP	Word puzzle		
		SIM	Simulation			O-QZ	Online quiz		
		RP	Role Plays			O-GAME	Online game-based assessment		
		SDL	Self-directed learning			M-MOD	Making of Model		
		PSM	Problem-Solving Method			M-CHT	Making of Charts		
		KL	Kinaesthetic Learning			M-POS	Making of Posters		

		W	Workshops			C-INT	Conducting interview		
		GBL	Game-Based Learning			INT	Interactions		
		LS	Library Session			CR-RED	Critical reading papers		
		PL	Peer Learning			CR-W	Creativity Writing		
		RLE	Real-Life Experience			C-VC	Clinical video cases		
		PER	Presentations			SP	Simulated patients		
		D-M	Demonstration on Model			PM	Patient management problems		
		PT	Practical			CHK	Checklists		
		X-Ray	X-ray Identification			Mini-CEX	Mini-CEX		
		CD	Case Diagnosis			DOPS	DOPS		
		LRI	Lab Report Interpretation			CWS	CWS		
		DA	Drug Analysis			RS	Rating scales		
		D	Demonstration			RK	Record keeping		
		D-BED	Demonstration Bedside			COM	Compilations		
		DL	Demonstration Lab			Portfolios	Portfolios		
		DG	Demonstration Garden			Log book	Log book		
		FV	Field Visit			TR	Trainers report		
						SA	Self-assessment		
						PA	Peer assessment		
						360D	360-degree evaluation		
						PP-Practical	Practical		
						VV-Viva	Viva		
						DOAP	Demonstration Observation Assistance Performance		
						SBA	Scenario Based Assessment		
						CBA	Case based Assessment		
						S-LAQ	Structured LAQ		
						OSCE	Observed Structured Clinical Examination		
						OSPE	Observed Structured Practical Examination		
						DOPS	Direct observation of procedural skills		