OUTCOME-BASED DYNAMIC CURRICULUM for MD/ MS AYURVEDA
(PRESCRIBED BY NCISM)

अभ्यासात्प्राप्यते दृष्टिः कर्मसिद्धिप्रकाशिनी।

Semester I Course - Research Methodology

(SUBJECT CODE : AYPG-RM)

(Applicable from 2024-25 batch, from the academic year 2024-25 onwards until further notification by NCISM)

ncism

।। आयुषे सर्वलोकानाम्।।

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

PREFACE

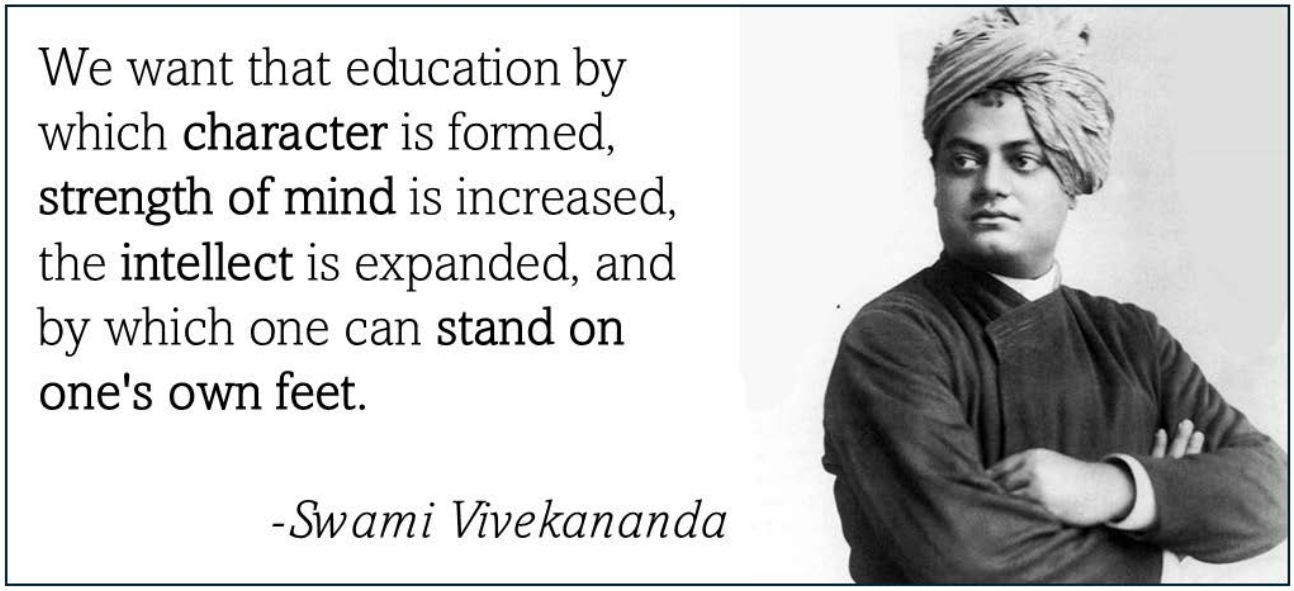
The field of Ayurveda, with its rich history and profound insights into health and well-being, demands a rigorous and evidence-based approach to research. To advance the understanding and application of Ayurvedic principles, it is essential that postgraduate students are equipped with a solid foundation in research methodology.

This syllabus has been carefully crafted to provide students with a comprehensive insight into literature search, framing research questions, stating hypotheses, research design, data analysis, ethical considerations, and scientific writing. By mastering these essential skills, students will be well-prepared to conduct independent research, contribute to the scholarly literature, and advance the field of Ayurveda.

The syllabus covers a wide range of topics, from the fundamentals of research to advanced techniques such as systematic reviews and meta-analyses. In an effort directed to learner-centric education, it also incorporates practical and experiential elements, including case-based learning and hands-on exercises, to ensure that students can apply their knowledge to real-world research challenges. At the same time, the syllabus provides an adequate opportunity for a teacher to kindle research acumen amongst students.

It is believed that this syllabus will serve as a valuable resource for postgraduate students in Ayurveda. By diligently studying and applying the principles outlined herein, students can develop the skills and knowledge necessary to conduct rigorous and meaningful research that will contribute to the advancement of Ayurveda.

INDEX



NCISM

OUTCOME-BASED DYNAMIC CURRICULUM for MD/ MS AYURVEDA

Subject Code : AYPG-RM

Summary & Credit Framework

Module Number & Name	Credits	Notional Learning Hours	Maximum Marks of assessment of modules (Formative assessment)	Module Marks for Summative Assessment (University Examination)
1. Research Basics	1	30	25	20
2. Ethics and Regulatory Aspects in Research	1	30	25	10
3. Research Types - Part 1	2	60	50	20
4. Research Types - Part 2	1	30	25	20
5. Research Types - Part 3	2	60	50	20
6. Research Communication	2	60	50	10
	9	**270**	**225**	**100**

Credit frame work

AYPG-RM has 6 modules of 9 credits which includes 270 Notional Learning Hours. One Credit will be having 30 Hours of learner participation and teaching, practical and experiential learning will in the ratio of 1:2:3 i.e. One credit will have 5 hours of teaching, 10 hours of practical training and 13 hours of experiential learning and 2 hours of modular assessment for 25 marks.

Course Code and Name of Course

Course code	Name of Course
AYPG-RM	Semester I Course - Research Methodology

Table 1 : Course learning outcomes and mapped Program learning outcomes

CO No	A1 Course learning Outcomes (CO) AYPG-RM At the end of the course AYPG-RM, the students should be able to-	B1 Course learning Outcomes mapped with program learning outcomes.
CO1	Demonstrates decision-making based on acquired knowledge, understanding various research types.	PO1,PO5
CO2	Conduct a comprehensive literature review to identify research gaps and define areas for future study.	PO2,PO5
CO3	Evaluate and appraise the literature to assess research gaps and the necessity for new studies.	PO2,PO5
CO4	Design and conduct research protocols using appropriate study designs and develop effective assessment tools tailored for Ayurveda.	PO2,PO5
CO5	Implement and monitor ethical and regulatory guidelines throughout the research process.	PO2,PO4,PO5
CO6	Prepare and disseminate research findings through presentations, publications in indexed journals and other professional platforms adhering to publication ethics.	PO2,PO5
CO7	Deliver impactful presentations of research projects to peers, demonstrating clarity, analysis, and professional communication.	PO2,PO5,PO6
CO8	Utilize information technology tools to enhance research capabilities, manage observations, and improve analytical accuracy.	PO7,PO8
CO9	Apply advanced instrumentation and modern techniques in Ayurvedic research to elevate study quality, accuracy and integrity.	PO3,PO5,PO7,PO8

Table 2 : Course contents (Modules- Credits and Marks)

2A Module Number	2B Module & units	2C Number of Credits	2D Notional Learning hours				2E Marks
			Theory	Practical Training	Experiential Learning including modular assessment	Total	
1	**M-1 Research Basics** The module 'Research Basics' provides a comprehensive foundation in research, focusing on integrating Ayurvedic principles with contemporary scientific methodologies. It emphasizes the significance of conducting thorough literature reviews, critically appraising classical Ayurvedic texts alongside modern studies, and understanding evidence-based practices in Ayurveda. The module also guides learners in identifying relevant research problems and developing clear, well-informed research questions and hypotheses, bridging the gap between traditional knowledge and modern scientific inquiry. • **M1U1** Overview of research process and evidence-based medicine • **M1U2** Research methods in Ayurveda Medicine • **M1U3** Literature search and critical appraisal of literature • **M1U4** Identification of research problem • **M1U5** Research question and Hypothesis	1	5	10	15	(30)	20
2	**M-2 Ethics and Regulatory Aspects in Research** The module 'Ethics and Regulatory Aspects in Research' covers essential ethical principles and guidelines crucial for conducting research in Ayurveda. It provides insights into the constitution and functioning of Institutional Ethics Committees for both human and animal studies, ensuring adherence to ethical standards. The module also highlights the National Pharmacovigilance Program for Ayurveda, focusing on adverse	1	5	10	15	(30)	10

	drug reporting methods. Additionally, it explores the scope and significance of Intellectual Property Rights (IPR) and patents, ensuring researchers understand their role in safeguarding innovations in the field of Ayurveda. • **M2U1** Basics of Ethics and Ethics Guidelines • **M2U2** Institutional Ethics Committees Institutional Ethics Committees (Human and Animal) - constitution and review process • **M2U3** National Pharmacovigilance Program National Pharmacovigilance Program for Ayurveda medicine and Adverse Drug reporting methods • **M2U4** Scope and Importance of IPR and Patents						
3	**M-3 Research Types - Part 1** The module 'Research Types - Part 1' offers a comprehensive understanding of various research types relevant to Ayurveda. It introduces learners to both qualitative and quantitative research methodologies, providing a detailed exploration of descriptive and observational study designs. The module emphasizes the importance of selecting appropriate research designs based on the nature of the inquiry, enabling researchers to systematically investigate Ayurvedic concepts and clinical practices. This balanced approach to qualitative and quantitative research ensures a thorough understanding of different study frameworks, allowing for a more nuanced and evidence-based exploration of Ayurveda. • **M3U1** Different types of research • **M3U2** Qualitative Research • **M3U3** Descriptive study designs • **M3U4** Observational study designs	2	10	20	30	(60)	20
4	**M-4 Research Types - Part 2** The module 'Research Types - Part 2' focuses on critical aspects of research accuracy and innovation in Ayurveda. It begins with an in-depth examination of bias in research and various strategies to minimize or	1	5	10	15	(30)	20

	eliminate it, ensuring the validity of study outcomes. The module then explores the methodology of Randomized Controlled Trials (RCTs), a gold standard in clinical research, and their application in Ayurvedic studies. Finally, it introduces learners to emerging and innovative study designs, equipping researchers with modern tools to advance evidence-based Ayurveda while maintaining rigorous scientific standards. • **M4U1** Bias and ways to eliminate bias • **M4U2** Randomized Controlled Trials • **M4U3** Newer study designs						
5	**M-5 Research Types - Part 3** The module 'Research Types - Part 3' examines essential research domains in Ayurveda. It covers preclinical studies as a foundation for drug research, highlights the significance of literary research, and emphasizes the development of tailored research tools. Additionally, it addresses the use of appropriate assessment tools and terminology, ensuring researchers are equipped to conduct rigorous investigations in Ayurveda. • **M5U1** Preclinical studies • **M5U2** Drug research • **M5U3** Literary research • **M5U4** Development of tools • **M5U5** Assessment Tools Use of appropriate assessment tools and terminology	2	10	20	30	(60)	20
6	**M-6 Research Communication** The module 'Research Communication' focuses on key elements of presenting research in Ayurveda. It covers writing research protocols, proposals, and synopses, along with the structure of dissertations. Learners will also explore the types and formats of journal articles and gain insights into conducting systematic reviews and meta-analyses, essential for synthesizing evidence in the field. • **M6U1** Research protocol writing	2	10	20	30	(60)	10

	Research protocol/proposal/Synopsis writing • **M6U2** Dissertation contents and structure • **M6U3** Types and structure of journal articles • **M6U4** Systematic review and meta-analysis • **M6U5** Publication guidelines • **M6U6** Referencing • **M6U7** Scientometrics • **M6U8** Publication Ethics						
		9	**45**	**90**	**135**	**270**	**100**

Table 3 : Modules - Learning objectives

3A Sr.No	3B Course Outcome	3C Learning Objective (At the end of the (lecture/practical/experiential) learning session, the students should be able to)	3D Notional learning Hours	3E Lecture/ Practical Training/ Experiential Learning	3F Domain/ Sub Domain	3G Level (Does/Shows how/ Knows how/Know)	3H Teaching Learning Methods
Module 1 : Research Basics							
Module Learning Objectives **(At the end of the module, the students should be able to)** 1. Describe the importance of evidence-based medicine, its levels, and the research process 2. Conduct literature review and critical appraisals of articles 3. Identify a research problem 4 . Frame research question, hypotheses, and objectives							
Unit 1 Overview of research process and evidence-based medicine **References:** 1,2,3							
3A	**3B**	**3C**	**3D**	**3E**	**3F**	**3G**	**3H**
1	CO1,CO2,CO3	Describe research process and importance of evidence-based medicine	1	Lecture	CC	Knows-how	L&PPT
2	CO1,CO2,CO3	Elaborate the current status of Ayurveda medicine research	2	Practical Training 1.1	PSY-GUD	Knows-how	PBL
3	CO1,CO2,CO3	Identify the level of evidence in Ayurveda research	2	Experiential-Learning 1.1	CC	Knows-how	CBL,DIS
Unit 2 Research methods in Ayurveda Medicine							

References: 4

3A	3B	3C	3D	3E	3F	3G	3H
1	CO1,CO2,CO3	Appreciate research concepts in Ayurveda medicine system	1	Lecture	CC	Knows-how	FC
2	CO1,CO2,CO3	Demonstrate different research concepts in Ayurveda medicine systems with examples	2	Practical Training 1.2	PSY-GUD	Shows-how	DIS,PrBL
3	CO1,CO2,CO3	List out the challenges and probable solutions in Ayurveda medicine research	2	Experiential-Learning 1.2	PSY-GUD	Shows-how	BS,PrBL

Unit 3 Literature search and critical appraisal of literature

References: 5

3A	3B	3C	3D	3E	3F	3G	3H
1	CO1,CO2,CO3	Describe the systematic approach of literature search using biomedical databases, search engines and software	1	Lecture	CC	Knows-how	L&PPT
2	CO1,CO2,CO3	Demonstrate literature search in medical databases	2	Practical Training 1.3	PSY-GUD	Shows-how	D,DIS
3	CO1,CO2,CO3	Conduct a literature search for a given scenario	3	Experiential-Learning 1.3	PSY-GUD	Shows-how	BS

Unit 4 Identification of research problem

References: 6,7

3A	3B	3C	3D	3E	3F	3G	3H
1	CO1,CO2,CO3	Describe the methods for identifying the research problem	1	Lecture	CC	Knows-how	L&PPT
2	CO1,CO2,CO3	Enlist different ways of identifying the research problem	2	Practical Training 1.4	PSY-GUD	Shows-how	PBL
3	CO1,CO2,CO3	Identify the research problem	3	Experiential-Learning 1.4	CAN	Shows-how	CBL

Unit 5 Research question and Hypothesis

References: 8

3A	3B	3C	3D	3E	3F	3G	3H
1	CO1,CO2,CO3	Define and explain characteristics of good research question, hypotheses- types and formulation, framing objectives	1	Lecture	CC	Know	FC
2	CO1,CO2,CO3	Demonstrate the qualities of good research questions (PICO/T and FINER approach), Demonstrate the importance of framing appropriate hypotheses and pertinent objectives.	2	Practical Training 1.5	PSY-GUD	Shows-how	PBL
3	CO1,CO2,CO3	Frame research questions, hypotheses, and study objectives.	3	Experiential-Learning 1.5	CAP	Knows-how	BS,PBL

Practical Training Activity

Practical No	Name	Activity details
Practical	Elaborate the current	The teacher will discuss a minimum of one major research initiative like‘A Science Initiative in Ayurveda’, CSIR-NMITLI

Training 1.1	status of Ayurveda medicine research	Ministry of Ayush research initiatives in COVID-19, or any other current important Ayurveda medicine research projects or research projects of other systems of medicine. Students can be divided into groups, and each group will be given a specific assignment, such as the whole system approach or the Black Box approach, and asked to summarise the impressions (uniqueness, relevance, importance) about the given research project. Brainstorming and group discussions of prospective research topics of the Ayurveda topics.
Practical Training 1.2	Demonstrate different research concepts in Ayurveda medicine systems with examples	The teacher will demonstrate a few research concepts quoted in Ayurveda medicine texts. Students will be divided into groups. Each group should refer to Ayurveda medicine texts quoting research concepts, enlist any five in their prospective study area, and submit assignments. Students will be encouraged to do GD on the submitted assignments and present their relevance and applications to current research trends.
Practical Training 1.3	Display and demonstrate literature search in medical databases	The teacher will demonstrate searching relevant articles using search engines by following MeSH terms, standard Ayurveda medicine terms [WHO publication], Filtering & Boolean operators; LitMaps; and e-resources of Ayurveda medicine systems. Following these students will do a teacher-guided activity. Compilation Students should be asked to select one topic and do a narrative review / Systematic review using the MeSH terms, compile at least 15 results, and submit it. Students should be aware using of the Namaste Portal.
Practical Training 1.4	Enlist different ways of identifying the research problem	The teacher will demonstrate different ways of identifying research problems like limitations/ lacunae/ research gap/ evidence gap/ future scope of published studies, current trends, integration of disciplines/systems, clinical observations, expert opinion, brainstorming, and national/ local thrust areas with examples. TBL The group of students will discuss the research problems and will present them under the points of the current scenario of the problem, Knowledge gap, Need of research question, Hypothesis, and Null hypothesis formation.
Practical Training 1.5	Demonstrate the qualities of good research questions using PICO/T in the clinical scenario and the FINER approach in both clinical and non-clinical	The teacher will demonstrate how to frame a research question (define and redefine), hypotheses, and objectives with examples reflecting different research types and subjects. Students will refer to a minimum of 5 research articles related to the study area and evaluate the research question, hypotheses, and objectives in these articles based on the criteria as demonstrated by the teacher. Fishbowl activity – Clinical scenarios will be given by the teacher. The half group will form the research question / Hypothesis / Objectives on the scenario. The other group will observe the question /Hypothesis with PICOT and FINER guidelines and will discuss it Group activity

	scenarios, hypotheses, and objectives.	A group of students will review the 5 articles, understand the research question and variables, and observe using PICOT and FINER guidelines.
Experiential learning Activity		
Experiential learning No	**Name**	**Activity details**
Experiential-Learning 1.1	Identify the level of evidence in Ayurveda medicine research	The teacher will divide students into 2 to 5 groups. The teacher will give a few scenarios or topics (both from Ayurveda medicine and contemporary medicine, for example, hypertension, diabetes, yoga procedures, therapeutic procedures, etc.) to a group of students. Each group should gather research works for each level of the evidence pyramid. In the end, the lacunae in evidence across the different examples will be identified and summarised.
Experiential-Learning 1.2	List out the challenges and probable solutions in Ayurveda medicine research.	The teacher will divide students into 2 to 5 groups. Each group should be assigned one concept quoted in Ayurveda medicine texts in the hospital community and record the challenges. Students shall share their observations and the teacher will summarise.
Experiential-Learning 1.3	Conduct a literature search for a given scenario	Students will identify a topic of interest related to their specialty and do a literature search using the systematic approach and then evaluate the collected literature under the guidance of a teacher.
Experiential-Learning 1.4	Identify the research problem	Students will be divided into 2 to 5 groups and each group will be involved in identifying the research problem using any of the methods demonstrated by the teacher, followed by a presentation and discussion.
Experiential-Learning 1.5	Frame research questions, hypotheses, and study objectives.	For the research problem identified in the previous unit “Research problem”, students will frame the research question, hypotheses, and objectives followed by discussion regarding the same as well as other possible research question formats.
Modular Assessment		
Assessment method		**Hour**
Instructions - Conduct a structured Modular assessment. Assessment will be for 25 marks per credit. Keep structured marking pattern. Use different assessment methods in each module for the semester. Keep record of the structured pattern used for assessment. Calculate the Modular grade point as per		2

table 6 C.

Project work: (25 marks)

Develop a research question, hypothesis, and objectives based on a given case scenario.

(Evaluation based on following checklists)

- PICOT / FINER criteria
- Self-explanatory
- H0 & H1 (where applicable)
- Primary & secondary objectives, their clarity, and relevance to the study

Or

Any practical in converted form can be taken for assessment..

Or

Any of the experiential as portfolio/ refelections / presentations can be taken as an assessment.

Module 2 : Ethics and Regulatory Aspects in Research

Module Learning Objectives
(At the end of the module, the students should be able to)
1 Illustrate basic principles of research ethics
2 Describe the composition and role of the research ethics committee
3 Appraise the Pharmacovigilance program for Ayurveda medicine and ADR reporting
4 Describe various types of IPR and patent process

Unit 1 Basics of Ethics and Ethics Guidelines

References: 9,10,11,12,13

3A	3B	3C	3D	3E	3F	3G	3H
1	CO5	Describe the history, need, role, and fundamental principles of ethics in research related to Humans and Animals.	1	Lecture	CC	Knows-how	FC,L_VC
2	CO5	Explain the history and contents of ICMR, ICH-GCP, and GCP-Ayurveda medicine guidelines.	1	Lecture	CC	Knows-how	L&PPT
3	CO5	Comprehend the contents of ICMR, ICH-GCP and GCP-Ayurveda medicine guidelines including the process of Clinical trial registration	1	Practical Training 2.1	PSY-GUD	Shows-how	DIS,PER
4	CO5	Enlist cases where the principle of autonomy and justice is upheld and compromised.	1	Practical Training 2.2	PSY-SET	Shows-how	PBL
5	CO5	Enlist cases where principles of beneficence/non-maleficence are upheld and compromised	1	Practical Training 2.3	PSY-SET	Shows-how	PBL
6	CO5	Demonstrate the ethical principles by developing a case scenario.	1	Experiential-Learning 2.1	AFT-VAL	Shows-how	CBL

7	CO5	Identify the ethical principles in a given case scenario.	1	Experiential-Learning 2.2	AFT-VAL	Shows-how	DIS,RP
Unit 2 Institutional Ethics Committees Institutional Ethics Committees (Human and Animal) - constitution and review process **References:** 14,15,16,17							
3A	**3B**	**3C**	**3D**	**3E**	**3F**	**3G**	**3H**
1	CO5	Explain the constitution, composition, review process, registration, and regulation of the Institutional human and animal ethics committee.	1	Lecture	CC	Knows-how	L&PPT
2	CO5	Construct the composition of the ethics committee through different case scenarios.	2	Practical Training 2.4	PSY-SET	Shows-how	CBL
3	CO5	Enlist the elements of the review process through different case scenarios	3	Practical Training 2.5	PSY-SET	Shows-how	CBL
4	CO5	Identify ethical issues specific to Ayurveda medicine research through different case scenarios.	2	Practical Training 2.6	PSY-SET	Shows-how	CBL,PBL,RP
5	CO5	Demonstrate the review process of IHEC	6	Experiential-Learning 2.3	AFT-VAL	Shows-how	PBL,RP
6	CO5	Demonstrate the review process of IAEC	5	Experiential-Learning 2.4	AFT-VAL	Shows-how	PBL,RP
Unit 3 National Pharmacovigilance Program National Pharmacovigilance Program for Ayurveda medicine and Adverse Drug reporting methods **References:** 18,19,20,21							
3A	**3B**	**3C**	**3D**	**3E**	**3F**	**3G**	**3H**

1	CO5	Explain the history, objectives, hierarchy, and ADR reporting method of the Pharmacovigilance program for Ayurveda medicine & H drugs.	1	Lecture	CC	Knows-how	L&PPT

Unit 4 Scope and Importance of IPR and Patents

References: 22,23,24,25

3A	3B	3C	3D	3E	3F	3G	3H
1	CO5	Outline the importance and various forms of IPR (copyright, trademark, industrial design, geographical designs, patents).	1	Lecture	CC	Knows-how	FC,L&PPT

Practical Training Activity

Practical No	Name	Activity details
Practical Training 2.1	Identify the contents of ICMR, ICH-GCP, and GCP-Ayurveda medicine guidelines including the process of Clinical trial registration.	Group Activity The teacher will present different sections of ICMR, ICH-GCP, and GCP-Ayurveda medicine guidelines. Students will be divided into 2 to 5 groups and each group will be assigned one key section from these guidelines and students will read and present the summary of the section. Following this, the teacher will demonstrate the process of Clinical trial registration. Students will assess the CTRI website.
Practical Training 2.2	Enlist cases where the principle of autonomy and justice is upheld and compromised.	The teacher will discuss cases like the Nuremberg trials, and Tuskegee Syphilis Experiments or create any case scenario related to the said ethics principles. Students will be divided into 2 to 5 groups and each group will be given a case scenario like decision making, informed consent, patient information sheet, treatment discrimination based on cultural or social status, voluntariness to withdraw, privacy, confidentiality, research misconduct, etc. The groups have to identify and analyze which ethics principle is upheld or compromised and also to suggest any corrective measures if required. Role plays by groups The importance of the Informed Consent form, Random selection of patients using software, ADR protocol, and Patient withdrawal guidelines should be emphasized.

Practical Training 2.3	Enlist cases where principles of beneficence/non-maleficence are upheld and compromised	The teacher will discuss cases such as Tuskegee Syphilis Experiments, Stanley Milgram's infamous experiment, or create any case scenario related to the said ethics principles. Students will be divided into 2 to 5 groups and each group will be given a case scenario to assess the risk-benefit ratio (for example vaccination trials, and anti-cancer trials). The groups have to suggest any corrective measures if possible. Brainstorming Discussions about ethics in Vaccination trials, New drug discovery, and Ethical approaches to enroll subjects having disorders like hypertension, Diabetes, Paediatric patients, etc, or are already on another medication.
Practical Training 2.4	Construct the composition of the ethics committee through different case scenarios.	The teacher will present the composition of the ethics committee. Students will be divided into 2 to 5 groups and each group will be given a case scenario like quorum requirements, gender representation, presence of sponsor representative during IEC, qualifications and responsibilities of members, absence of a veterinarian, CCSEA nominee, etc. The group has to identify, analyze, and present the mistake in the ethics committee composition. The teacher facilitates discussion among groups and summarises the key points.
Practical Training 2.5	Revise the elements of the review process through different case scenarios	The teacher will present the elements of the review process. Students will be divided into 2 to 5 groups and each group will be given a case scenario like wrong risk identification, review by voting/unanimous call, review in an emergency, expedited review, waiver of IEC review, conflict of interest, etc. Each group will identify, analyze, and present the mistake in the ethics review process. The teacher facilitates discussion among groups and summarises the key points.
Practical Training 2.6	Identify ethical issues specific to Ayurveda medicine research through different case scenarios.	The teacher will present case scenarios specific to Ayurveda medicine research, like the benefit of survey studies to participants, mineral formulations, cultural issues of certain medicines/ingredients, and discuss related ethical issues. Students will be divided into 2 to 5 groups and each group will be given a case scenario like ethics involved in therapeutic procedures, add-on therapy, yoga intervention, new dosage form, use of fewer animals, vulnerable population, sponsored pharma product, etc. Each group will analyze the ethical issues involved and suggest possible solutions. The teacher facilitates discussion among groups and summarises the key points.
Experiential learning Activity		
Experiential learning No	**Name**	**Activity details**
Experiential-Learning 2.1	Appraise the ethical principles by developing a case scenario.	Students will be divided into groups and the teacher will assign ethics principles for scenario development like privacy, confidentiality, voluntary participation, anonymity, no harm to participants, informed consent, vulnerability, etc. The group will develop the script for a skit to be enacted.

Experiential-Learning 2.2	Identify the ethical principles in a given case scenario.	The groups will enact the developed skit and other groups will identify the ethical principle. The teacher facilitates discussion among groups and summarises key aspects.
Experiential-Learning 2.3	Demonstrate the review process of IHEC	The teacher will develop dummy research protocols on human participants with challenging scenarios like an incomplete application form, need for insurance, deviation from initial protocol, violation, involving vulnerable populations like children, terminally ill, differently abled, etc. Students are divided into groups and each group will be given a dummy protocol, a week before the class and explained that they will be members of a mock IE review committee. During the class, each group will perform the mock review in front of the class and decide whether to approve or suggest changes for resubmission or reject. The teacher will facilitate discussion among groups and summarise key aspects.
Experiential-Learning 2.4	Demonstrate the review process of IAEC	The teacher will develop dummy research protocols involving animals with challenging scenarios like an incomplete application form, including higher animals, multiple animal groups, procedures causing harm to animals, redundant animal experiments, etc. Each group will be given a dummy protocol, a week before the class and explained that they will be members of a mock IAE review committee. During the class, each group will perform the mock review in front of the class and decide whether to approve or suggest changes for resubmission or reject. The teacher will facilitate discussion among groups and summarise key aspects.

Modular Assessment

Assessment method	**Hour**
Instructions - Conduct a structured Modular assessment. Assessment will be for 25 marks per credit. Keep structured marking pattern. Use different assessment methods in each module for the semester. Keep record of the structured pattern used for assessment. Calculate the Modular grade point as per table 6 C. **Mock review process** (Formative assessment is based on the presentation done during Experiential Learning in Unit-2—institutional ethics committees (human and animal)—constitution and review process) • *Assessment Checklist for IHEC mock review:* Trial protocol, written informed consent form(s), subject recruitment procedures (e.g. advertisements), written information to be provided to subjects, investigator's brochure on the study drugs, safety information, information about payments and compensation, investigator's curriculum vitae *Assessment Checklist for IAEC mock review:* Trial protocol, respective forms, criteria for animal selection and number required, investigator's brochure on the study drugs, safety information, information about analyses and disposal, investigator's curriculum vitae, visit to the animal house and look for the infrastructure and facilities.	2

Or Any practical in converted form can be taken for assessment.. Or Any of the experiential as portfolio/ refelections / presentations can be taken as assessment.. (25 Marks)	

Module 3 : Research Types - Part 1

Module Learning Objectives
(At the end of the module, the students should be able to)
1 Understand types of research
2 Comprehend different methods based on the type of research
3 Apply study designs in Ayurveda medicine Research

Unit 1 Different types of research

References: 26,95

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4	Distinguish different types of research	1	Lecture	CK	Knows-how	L&PPT
2	CO4	Display different types of research with examples	2	Practical Training 3.1	PSY-GUD	Shows-how	FC

Unit 2 Qualitative Research

References: 29

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4	Describe qualitative research - definition, characteristics, relevance, types, methods of data collection, and ways to maintain robustness like credibility, transferability, dependability, and confirmability.	3	Lecture	CC	Knows-how	L&GD,PER
2	CO4	Identify the methods used in qualitative research.	4	Practical	PSY-	Shows-	CBL,DIS

				Training 3.2	GUD	how	
3	CO4	Moderate/participate in Focussed Group Discussions and interviews to illustrate the methods of qualitative research.	6	Experiential-Learning 3.1	PSY-GUD	Shows-how	PBL,RP

Unit 3 Descriptive study designs

References: 31,98,99

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4	Explain and distinguish various types of descriptive studies (Case report, Case series, Cross-sectional, longitudinal)	3	Lecture	CC	Knows-how	L&PPT
2	CO4	Differentiate the descriptive studies in published literature – Case report	2	Practical Training 3.3	PSY-GUD	Shows-how	CBL,SDL
3	CO4	Differentiate the descriptive studies in published literature – Case series	2	Practical Training 3.4	PSY-GUD	Shows-how	CBL,SDL
4	CO4	Differentiate the descriptive studies in published literature – Cross-sectional study	2	Practical Training 3.5	PSY-GUD	Shows-how	CBL,SDL
5	CO4	Differentiate the descriptive studies in published literature – Longitudinal study	2	Practical Training 3.6	PSY-GUD	Shows-how	CBL,SDL
6	CO4	Acquire the knowledge of conducting various descriptive studies in hospital community/classroom/hostel.	10	Experiential-Learning 3.2	PSY-GUD	Shows-how	PrBL,TPW

Unit 4 Observational study designs

References: 32,33,102,103

3A	3B	3C	3D	3E	3F	3G	3H

1	CO4	Distinguish various types of observational studies (case-control, cohort, and cross-sectional analytical) and their applications	3	Lecture	CC	Knows-how	L&PPT
2	CO4	Differentiate the cross-sectional analytical studies in published literature.	2	Practical Training 3.7	PSY-GUD	Shows-how	CBL,SDL
3	CO4	Differentiate the case-control studies in published literature.	2	Practical Training 3.8	PSY-GUD	Shows-how	CBL,SDL
4	CO4	Differentiate the cohort studies in published literature.	2	Practical Training 3.9	PSY-GUD	Shows-how	CBL,SDL
5	CO4	Acquire the knowledge of conducting various observational studies.	10	Experiential-Learning 3.3	PSY-GUD	Shows-how	PBL,TPW

Practical Training Activity

Practical No	Name	Activity details
Practical Training 3.1	Demonstrate different types of research with examples	The teacher refers to and discusses a minimum of five research articles related to different types of research such as qualitative research, quantitative research, applied research, exploratory, translational research, implementation, and integrative/ interdisciplinary research, and classifies them under the category.
Practical Training 3.2	Differentiate methods used in qualitative research.	The teacher refers to and discusses do-don’ts in Focus group discussion (FGD), preparation of interview schedule and guide, interpretation of recorded interview (transcript, code, category, theme, sub-theme), and creating sociograms.
Practical Training 3.3	Appraise the descriptive studies in published literature – Case report	The teacher refers to and discusses a few Case reports. The student identifies the prerequisite for a case report and observations to be made and documented while dealing with a rare/ unique/interesting case. Each Student should select an article regarding the case report and review it through CARE Guidelines. Ask students to download the Checklist review the article as per the checklist and submit it.
Practical Training 3.4	Differentiate the descriptive studies in published literature –	The teacher refers to and discusses a few Case series. The student identifies the prerequisite for a case series, and observations to be made and documented. Each Student should select an article regarding the case series and review it through the Guidelines. Ask students to download

	Case series	the Checklist review the article as per the checklist and submit it.
Practical Training 3.5	Identify the descriptive studies in published literature – Cross-sectional study	The teacher refers to and discusses research articles/previous thesis on cross-sectional studies like ICMR InDIAB. The student identifies/ summarises the basic elements (setting, location, time, mode of selection, sampling), merits, and demerits of the cross-sectional study.
Practical Training 3.6	Differentiate the descriptive studies in published literature – longitudinal study	The teacher refers to and discusses research articles/previous studies on longitudinal studies like the Framingham Study. The student identifies/ summarises the basic elements (time, common characteristics of the group, assessment parameters), merits and demerits, and the applicability of the longitudinal study.
Practical Training 3.7	Identify the cross-sectional analytical studies in published literature.	The teacher refers to and discusses research articles/previous thesis on cross-sectional analytical studies. The student identifies/ summarises the basic elements (characteristics, data collection methods, bias), merits and demerits, applicability of cross-sectional analytical studies.
Practical Training 3.8	Appraise the case-control studies in published literature.	The teacher refers to and discusses research articles/previous theses on case-control studies. The student identifies/ summarises the basic elements (characteristics, data collection methods, bias, confounder, effect modifier, risk factors), merits and demerits, and applicability of case-control studies. The student should be assigned one article regarding a Case-control study. Review the article following STROBE guidelines and submit the report.
Practical Training 3.9	Appraise the cohort studies in published literature.	The teacher refers to discuss research articles on cohort studies. The student identifies/ summarises the basic elements (characteristics, data collection methods, bias, confounder, effect modifier, risk factors), merits and demerits, and applicability of cohort studies. Brainstorming Students should be given activities to think about cohort study research questions as per Ayurveda.
Experiential learning Activity		
Experiential learning No	**Name**	**Activity details**
Experiential-	Moderate/participate in	Students will be divided into 2 to 5 groups and each group will be assigned activities such as selection of an ideal qualitative

Learning 3.1	FGD, In-depth interview.	research method for a specific research problem, role play on sensitive and non-sensitive topics for FGD, role play depicting desirable and undesirable characters regarding moderator, participants, and interviewer. While one group is performing a role-play of FGD, the other groups can be involved in transcript and sociogram preparation.
Experiential-Learning 3.2	Acquire the knowledge of conducting various descriptive studies in the hospital community/classroom/hostel.	Students will be divided into 2 to 5 groups. Each group will be assigned a different study design and study setting such as a hospital community/classroom/hostel. Later the students should present the findings, followed by a group discussion on methodology aspects. The teacher will summarise the key points.
Experiential-Learning 3.3	Acquire the knowledge of conducting various observational studies.	Students will be divided into 2 to 5 groups. Each group identifies a scenario/ topic for observational study and further designs a study considering the basic elements (selection of case and matching control, bias elimination, measurement of exposure and outcome) of each study design. Students should review observational studies from indexed journals review them under STROBE guidelines and submit them.

Modular Assessment

Assessment method	**Hour**
Instructions - Conduct a structured Modular assessment. Assessment will be for 25 marks per credit. Keep structured marking pattern. Use different assessment methods in each module for the semester. Keep record of the structured pattern used for assessment. Calculate the Modular grade point as per table 6 C. **Case-based evaluation: (25 Marks)** Each student will be given a published paper on a specific study design to evaluate the elements of the respective study design. Assessment of the review based on the summary of the given published research paper emphasizing the elements of the respective research design and Any practical in converted form can be taken for assessment.. Or Any of the experiential as portfolio/ refelections / presentations can be taken as assessment.. (25 Marks)	4

Module 4 : Research Types - Part 2

Module Learning Objectives
(At the end of the module, the students should be able to)
1 Understand different research designs used for interventional studies.
2 Comprehend merits, demerits, and applications of different designs.
3 Apply study designs in Ayurveda medicine Research.

Unit 1 Bias and ways to eliminate bias

References: 34,35,36,37

3A	3B	3C	3D	3E	3F	3G	3H
1	CO1,CO4	Explain bias at various stages of clinical trials and describe ways to eliminate bias such as randomization, blinding, and control.	1	Lecture	CC	Knows-how	FC,L&GD,L&PPT

Unit 2 Randomized Controlled Trials

References: 104

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4	Explain various types (pilot/ proof of concept/ exploratory, randomized/ blinded/ controlled, Superiority/No- inferiority/ equivalence, phases of clinical trials) and methodological details (defining eligibility and withdrawal criteria, outcome assessment and variables, safety monitoring) of Interventional studies.	3	Lecture	CC	Knows-how	CBL,FC,L&PPT
2	CO4	Appraise the Interventional study designs in published literature.	10	Practical	PSY-	Shows-	CBL

				Training 4.1	GUD	how	
3	CO4	Acquire the knowledge of conducting various interventional studies.	4	Experiential-Learning 4.1	AFT-VAL	Shows-how	BS,CBL,PER
4	CO4	Acquire the knowledge of conducting various interventional studies.	4	Experiential-Learning 4.2	AFT-VAL	Shows-how	BS,CBL,PER
5	CO4	Acquire the knowledge of conducting various interventional studies.	5	Experiential-Learning 4.3	AFT-VAL	Shows-how	BS,CBL,PER

Unit 3 Newer study designs

References:

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4	Non-conventional study designs (Black box design, n-1 design, whole system research, flexible-dose design)	1	Lecture	CK	Knows-how	DIS,FC,L &PPT

Practical Training Activity

Practical No	Name	Activity details
Practical Training 4.1	Appraise the Interventional study designs in published literature.	The teacher refers to and discusses research articles/previous theses on different types of interventional studies.

Experiential learning Activity

Experiential learning No	Name	Activity details
Experiential-	Acquire the knowledge	Students will be divided into groups and each group will appraise the methodology for studies involving interventions of different

Learning 4.1	of conducting various interventional studies.	natures such as diet/therapeutic procedure /medicine/counseling through published literature and present in the forthcoming class. Each student will review the article, methodology, assessment criteria, inclusion and exclusion criteria, and study design and will present it.
Experiential-Learning 4.2	Acquire the knowledge of conducting various interventional studies.	Each group will then present the observations on the methodology, followed by a group discussion on differences between the methodologies, merits/demerits of various interventional studies, and identification of challenges and possible solutions in the case of Ayurveda medicine studies.
Experiential-Learning 4.3	Acquire the knowledge of conducting various interventional studies.	Further, each group will design an interventional study on the topic given by the teacher and present.

Modular Assessment

Assessment method	**Hour**
Instructions - Conduct a structured Modular assessment. Assessment will be for 25 marks per credit. Keep structured marking pattern. Use different assessment methods in each module for the semester. Keep record of the structured pattern used for assessment. Calculate the Modular grade point as per table 6 C. **Case-based evaluation:** Each student will be given a published paper on an interventional study design. Checklist of assessment: The assessment will be based on the article review done by the student over the elements of the respective interventional study design, like objectives, literature review, sampling techniques, randomization, blinding, methodology, statistical analysis, results, discussion, and outcomes. Or Any practical in converted form can be taken for assessment.. Or Any of the experiential as portfolio/ refelections / presentations can be taken as assessment.. (25 Marks)	2

Module 5 : Research Types - Part 3

Module Learning Objectives
(At the end of the module, the students should be able to)
1 Comprehend the characteristics, methodology, and utility of different research studies.
2 Apply these different research studies in the context of Ayurveda medicine.

Unit 1 Preclinical studies

References: 38,39

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO9	Explain the basics of in silico, in vitro, and in vivo studies.	3	Lecture	CC	Knows-how	L&PPT
2	CO4,CO9	Demonstrate cell culture studies and animal procedures.	1	Practical Training 5.1	PSY-GUD	Shows-how	FV,L_VC
3	CO4,CO9	Demonstrate the utility of in-vitro and in-vivo studies in the Ayurveda medicine context.	2	Practical Training 5.2	PSY-GUD	Shows-how	FV
4	CO4,CO9	Demonstrate in silico studies.	2	Practical Training 5.3	PSY-GUD	Shows-how	L_VC
5	CO4,CO9	Acquaint with instrumentation and procedures related to the in silico, in vitro, and in vivo studies.	6	Experiential-Learning 5.1	AFT-VAL	Shows-how	FV

Unit 2 Drug research

References: 40

3A	3B	3C	3D	3E	3F	3G	3H

1	CO4,CO9	Describe protocols for drug quality testing.	1	Lecture	CK	Knows-how	FC,L&PPT
2	CO4,CO9	Explain and demonstrate different instrumentation used in drug research.	1	Lecture	CK	Knows-how	D,FV,L_VC
3	CO4,CO9	Review principles and applications of instruments.	2	Practical Training 5.4	PSY-SET	Shows-how	DIS,FV,L_VC
4	CO4,CO9	Check the quality of a drug/formulation.	3	Practical Training 5.5	PSY-SET	Shows-how	L_VC,PT
5	CO4,CO9	Acquaint with pharmacy college/QC unit in Ayurveda medicine pharmacy.	4	Experiential-Learning 5.2	AFT-VAL	Shows-how	FV,SDL

Unit 3 Literary research

References: 92,93,94,105,106

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO9	Define and describe the scope of literary research and the steps of manuscriptology.	1	Lecture	CK	Knows-how	L&PPT
2	CO4,CO9	Explore available manuscript resources.	5	Practical Training 5.6	PSY-SET	Shows-how	ML,SDL
3	CO4,CO9	Acquaint with manuscript library/ Oriental study institutions/ University Sanskrit departments/IKS center in IITs or Video on steps of manuscriptology.	5	Experiential-Learning 5.3	AFT-VAL	Shows-how	FV,SDL

Unit 4 Development of tools

References: 41

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO9	Explain the importance and types of tools.	1	Lecture	CK	Knows-how	L&GD
2	CO4,CO9	Describe stages of tool development and methods for validating developed tools.	1	Lecture	CC	Knows-how	L&GD
3	CO4,CO9	Demonstrate the process of tool development and validation.	3	Practical Training 5.7	PSY-SET	Shows-how	CBL,DIS
4	CO4,CO9	Develop a questionnaire.	5	Experiential-Learning 5.4	AFT-VAL	Shows-how	SDL
Unit 5 Assessment Tools Use of appropriate assessment tools and terminology **References:** 42,43,44,45,46,47,48							
3A	**3B**	**3C**	**3D**	**3E**	**3F**	**3G**	**3H**
1	CO4,CO9	Identify appropriate assessment tool.	1	Lecture	CK	Knows-how	L&PPT
2	CO4,CO9	Demonstrate standard terminologies (e.g. WHO, ICD 11, DSM V, NAMASTE)	1	Lecture	CK	Knows-how	D,L&PPT
3	CO4,CO9	Search and choose the appropriate assessment tool.	2	Practical Training 5.8	PSY-SET	Shows-how	DIS,SDL
4	CO4,CO9	Apply appropriate assessment tools in a given Ayurveda medicine scenario	3	Experiential-Learning 5.5	AFT-VAL	Shows-how	DIS,SDL
5	CO4,CO9	Compare minimum 5 Ayurveda medicine terms and compare with standard	3	Experiential-	AFT-	Shows-	DIS,PBL

		terminology.		Learning 5.6	VAL	how	

Practical Training Activity

Practical No	Name	Activity details
Practical Training 5.1	Demonstrate cell culture studies and animal procedures.	The teacher will demonstrate either in the lab or with the help of a video on cell culture and animal studies (animal handling, blood collection, dosing)
Practical Training 5.2	Explore the utility of in-vitro and in-vivo studies in the Ayurveda medicine context.	The teacher will facilitate a group discussion on landmark in-vitro, and in-vivo studies and explore the limitations/ challenges/ possibilities of in-vitro and in-vivo studies in Ayurveda medicine like solubility of herbo-mineral formulations, therapeutic procedures, etc. Interaction with experts about designing and conducting in-vitro and in-vivo studies (Desirable)
Practical Training 5.3	Demonstrate in-silico studies.	The teacher demonstrates the use of various software and databases to explore the utilities of in-silico studies in different domains like UNPD. Students in groups are encouraged to work on the provided domain and present their work Self Directed learning Awareness about Molecular docking and Demonstration of software of molecular docking.
Practical Training 5.4	Review principles and applications of instruments.	The teacher demonstrates the functioning and utility of high-end instruments like Spectrophotometer, HPTLC, HPLC, GC, LCMS, XRD etc using repository videos.
Practical Training 5.5	Check the quality of a drug/formulation.	The teacher demonstrates experiments on drug/formulation quality testing. Students are divided into groups and each group is given either an herb or a formulation, to carry out the quality testing of the same and record the findings. Include experiments like foreign matter, Moisture content, Total ash, Acid insoluble ash, Extractive values, Specific gravity, Tablet disintegration test, Tablet hardness, pH value, Acid value, friability test, thin layer chromatography etc. (Practical demonstration may be combined with Experiential learning -EL-5.2)
Practical Training 5.6	Explore available manuscript resources.	The teacher demonstrates online Manuscript Search. Student searches online Manuscript catalogs related to Ayurveda medicine or published literature and compiles them (Desirable).
Practical	Demonstrate the process	The teacher demonstrates a minimum of two published articles regarding tool development and tool validation. Students are

Training 5.7	of tool development and validation.	divided into groups and are encouraged to search published articles on tool development and validation. The teacher facilitates discussion among the group and highlights the robustness of the tool. [Tool includes an index, scale, questionnaire, medical instrumentation, software, apps etc.]
Practical Training 5.8	Search & choose the appropriate assessment tool.	The teacher demonstrates criteria for choosing assessment tools such as relevance (eg. ethnicity, time frame), specificity (eg. Pain assessment in OA and RA), and requirement (eg. diagnosis, screening). Students are divided into groups and instructed to choose appropriate assessment tools for at least 2 clinical conditions (like WHO-QoL, Diabetic risk assessment, pain, and Ayurveda medicine items). The teacher facilitates discussion among the groups and highlights the key concepts. Peer group learning Students should collect at least five assessment tools from the previous article, Studies, and compile the information, and share it.
Experiential learning Activity		
Experiential learning No	**Name**	**Activity details**
Experiential-Learning 5.1	Acquaint with instrumentation and procedures related to in silico, in vitro, and in vivo studies.	After the visit, the student will write their observations about the facility, laboratory instrumentation, animal procedures, safety guidelines.
Experiential-Learning 5.2	Acquaint with pharmacy college/QC unit in Ayurveda pharmacy.	Students visit the pharmacy college/QC unit in Ayurveda medicine pharmacy and compile their observations. This activity can be clubbed with Practical 5.2.
Experiential-Learning 5.3	Acquaint with a manuscript library.	Visit a manuscript library or Oriental study institutions/ University Sanskrit departments/IKS center at IITs or Departments related to Ayurveda medicine. Optional – Repository Video on steps of manuscriptology.
Experiential-Learning 5.4	Develop a questionnaire.	Develop a questionnaire for Ayurveda medicine. Group activity based on various tools useful for Ayurveda medicine (Desirable).
Experiential-Learning 5.5	Apply appropriate assessment tools in a	Students will be divided into groups and given the task of searching for assessment tools from either theses, published articles, or projects in a given Ayurveda medicine scenario followed by brainstorming on the utility and limitations

	given Ayurveda medicine scenario	Assessment tools from various articles compilation (at least 5) The questionnaire designing for an assessment of physiological functions. Review of questionnaire design from various articles
Experiential-Learning 5.6	Define a minimum of 5 Ayurveda medicine terms and compare them with standard terminology.	The teacher will define a minimum of 5 Ayurveda medicine terms and compare them with standard terminology. Students are divided into groups and each group works on a minimum of two terms of Ayurveda medicine, coins Standard operative definitions for the same, and presents. The teacher facilitates discussion among groups and summarises the key concepts. Refer to Namaste portal, WHO terminology, articles, and Book-Translational Ayurveda by Sanjeev Rastogi.

Modular Assessment

Assessment method	**Hour**
Instructions - Conduct a structured Modular assessment. Assessment will be for 25 marks per credit. Keep structured marking pattern. Use different assessment methods in each module for the semester. Keep record of the structured pattern used for assessment. Calculate the Modular grade point as per table 6 C. SAQ: 5 questions (1 question from each unit) – 25 Marks • Field report evaluation: 25 marks Evaluation of summary reports of Field visits, experiments in the lab, or demonstrated instruments: The report will be evaluated on the basis of active participation during the visit/lab, observation book detailing the observations during the visit/lab, and record-keeping. **or** Any practical in converted form can be taken for assessment.. (25 Marks) and Any of the experiential as portfolio/ refelections / presentations can be taken as assessment.. (25 Marks)	4

Module 6 : Research Communication

Module Learning Objectives
(At the end of the module, the students should be able to)
1. Prepare a synopsis/research protocol/proposal and enlist dissertation contents
2. Manage references using the Reference Manager Tool
3. Comprehend types and structures of different journal articles and prepare articles as per reporting guidelines
4. Identify misconduct in scientific writing and its consequences
5. Differentiate between credible and predatory journals

Unit 1 Research protocol writing Research protocol/proposal/Synopsis writing

References: 49,50,51,52,53

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO5,CO6 ,CO7,CO8	Explain the basic structure of the synopsis [Randomisation table, dummy table, GANTT chart, expected outcome, Budget]	2	Lecture	CC	Knows-how	L&PPT
2	CO4,CO5,CO6 ,CO7,CO8	Explain a checklist of synopsis/protocol and differentiate between academic protocol and funding proposal.	1	Lecture	CC	Knows-how	D,L&GD
3	CO4,CO5,CO6 ,CO7,CO8	Demonstrate the key points and processes of synopsis/protocol writing.	5	Practical Training 6.1	PSY-GUD	Shows-how	D,L&GD
4	CO4,CO5,CO6 ,CO7,CO8	Prepare an outline of the synopsis.	3	Experiential-Learning 6.1	AFT-VAL	Shows-how	CBL,DIS, SDL
5	CO4,CO5,CO6 ,CO7,CO8	Retrieve information about different funding agencies and their schemes especially applicable to students.	3	Experiential-Learning 6.2	AFT-VAL	Shows-how	CBL,DIS, SDL

Unit 2 Dissertation contents and structure

References: 54,55,56,57,58,59

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO5,CO6,CO7,CO8	Explain the structure of the dissertation for different study designs (IMRAD); Orientation to online theses repositories such as Shodhganga.	1	Lecture	CC	Knows-how	L&PPT
2	CO4,CO5,CO6,CO7,CO8	Appreciate the structure of the dissertation with a focus on specific requirements as per the type and design of the research.	3	Practical Training 6.2	PSY-GUD	Shows-how	CBL,DIS,PER
3	CO4,CO5,CO6,CO7,CO8	Critically appraise the result and discussion section of the thesis.	5	Experiential-Learning 6.3	AFT-VAL	Shows-how	DIS,PBL,SDL

Unit 3 Types and structure of journal articles
References: 60,61

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO5,CO6,CO7,CO8	Explain the structure of different types of journal articles.	1	Lecture	CC	Knows-how	L&PPT
2	CO4,CO5,CO6,CO7,CO8	Demonstrate the structure of different types of articles.	2	Practical Training 6.3	PSY-GUD	Shows-how	D,L&GD
3	CO4,CO5,CO6,CO7,CO8	Present an article in the journal club.	4	Experiential-Learning 6.4	AFT-RES	Shows-how	DIS,PER

Unit 4 Systematic review and meta-analysis
References: 62,63

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO5,CO6	Elaborate the process of Systematic review and meta-analysis.	1	Lecture	CC	Knows-	L&PPT

	,CO7,CO8					how	
Unit 5 Publication guidelines **References:** 64,65,66,67,68,69,70							
3A	**3B**	**3C**	**3D**	**3E**	**3F**	**3G**	**3H**
1	CO4,CO5,CO6 ,CO7,CO8	Explain publication guidelines such as STROBE, PRISMA, ARRIVE, CARE, CONSORT, etc and their variations.	1	Lecture	CK	Knows-how	L&PPT
2	CO4,CO5,CO6 ,CO7,CO8	Access different reporting guidelines.	2	Practical Training 6.4	PSY-GUD	Shows-how	D,ML,SDL
3	CO4,CO5,CO6 ,CO7,CO8	Review a published article by using a checklist of particular reporting guidelines.	3	Experiential-Learning 6.5	PSY-GUD	Shows-how	CBL,DIS,PER
Unit 6 Referencing **References:** 71,72,73,74,75,76,77,78,79							
3A	**3B**	**3C**	**3D**	**3E**	**3F**	**3G**	**3H**
1	CO4,CO5,CO6 ,CO7,CO8	Explain the need for referencing and bibliography. Enlist the different citation styles and references manager.	1	Lecture	CC	Knows-how	L&PPT
2	CO4,CO5,CO6 ,CO7,CO8	Demonstrate using any one reference manager tool.	4	Practical Training 6.5	PSY-GUD	Shows-how	D,PT
3	CO4,CO5,CO6 ,CO7,CO8	Appreciate referencing styles for different types of documents like journal articles, books, book chapters, conference proceedings, dissertations, online content, and Ayurveda medicine texts	3	Experiential-Learning 6.6	AFT-RES	Shows-how	PL,PBL,SDL
Unit 7 Scientometrics **References:** 80,81,82,83,84							

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO5,CO6 ,CO7,CO8	Explain journal impact factors (indexing databases, cite score, impact factor, Altimetric) and authors' impact metrics (h index, I 10 indices, G index).	1	Lecture	CC	Knows-how	L&PPT
2	CO4,CO5,CO6 ,CO7,CO8	Select an appropriate journal and identify its quality using scientometrics	2	Practical Training 6.6	PSY-GUD	Shows-how	D,DIS
3	CO4,CO5,CO6 ,CO7,CO8	Acquire knowledge about various aspects of scientometry.	3	Experiential-Learning 6.7	AFT-RES	Shows-how	SDL

Unit 8 Publication Ethics

References: 85,86,87,88,89,90,91

3A	3B	3C	3D	3E	3F	3G	3H
1	CO4,CO5,CO6 ,CO7,CO8	Explain ethical issues in publication (authorship criteria, plagiarism, falsification & fabrication of data).	1	Lecture	CK	Knows-how	L&PPT
2	CO4,CO5,CO6 ,CO7,CO8	Review guidelines related to Publication ethics (WAME, COPE, ICMJE, OSPA).	2	Practical Training 6.7	PSY-GUD	Shows-how	D,DIS
3	CO4,CO5,CO6 ,CO7,CO8	Check plagiarism using online software.	2	Experiential-Learning 6.8	PSY-GUD	Shows-how	SDL

Practical Training Activity

Practical No	Name	Activity details
Practical Training 6.1	Demonstrate the key points of synopsis/protocol	The teacher will demonstrate the key contents of the synopsis (title, introduction, need of study, research question, hypothesis, primary and secondary objectives) with a few examples.

	writing.	
Practical Training 6.2	Appreciate the structure of the dissertation with a focus on specific requirements as per the type and design of the research.	Students will be divided into groups and each group will be allotted a dissertation of a particular research design (clinical study, survey study, literary research, drug research, etc.) and they will be required to identify its specific elements (such as case report form in clinical study or questionnaire in survey study).
Practical Training 6.3	Demonstrate the structure of different types of articles.	The teacher will refer to different types of articles like editorial, original research articles, case reports, case series, case snippets, review articles, letters to the editor, short communication, perspective/ opinion/viewpoint, commentary, book review, debate/ discussions, vignette, etc. highlighting their structure and will explain the criteria to select a specific type. At the end of the session, the teacher will explain the concept of a journal club and allocate different types of articles to a group of students.
Practical Training 6.4	Access different reporting guidelines.	The teacher will demonstrate the different reporting guidelines using https://www.equator-network.org/
Practical Training 6.5	Demonstrate using any one reference manager tool.	The teacher will demonstrate the different features (searching, downloading, creating a library, importing to Word document etc) of any one reference manager tool such as EndNote, Mendeley, or Zotero. Following this, students will install the reference manager software, explore its features and then conduct an activity using the tool.
Practical Training 6.6	Select an appropriate journal and identify its quality using scientometrics.	The teacher will demonstrate the method of selecting an appropriate journal using manuscript matching tools like Journalfinder, Jane, Edanz, Endnote etc. and will subsequently demonstrate different metrics of journals shortlisted by the matching tools. Based on scientometrics, the teacher will explain how to identify predatory journals.
Practical Training 6.7	Review guidelines related to Publication ethics (WAME, COPE, ICMJE, OASPA).	The teacher demonstrates various guidelines related to Publication ethics like WAME, COPE, ICMJE, and OASPA- Open Access Scholarly Publishing Association.
Experiential learning Activity		

Experiential learning No	Name	Activity details
Experiential-Learning 6.1	Prepare an outline of the synopsis.	Students will be divided into groups and each group will be given a topic reflecting different types of research (drug research, clinical study, literary research, survey study, animal study, tool development etc) to prepare a framework of the synopsis, the students will present and critically appraise the key components.
Experiential-Learning 6.2	Retrieve information about different funding agencies and their schemes especially applicable for students.	Students will visit the websites of different funding agencies (Ministry of Ayush, ICMR, DST, DBT, CSIR, and others) browse through the different schemes, and select suitable schemes for postgraduate work.
Experiential-Learning 6.3	Critically appraise the result and discussion section of the thesis.	Students are divided into groups and each group will be assigned a dissertation/ research article (which follows the standard structure of the results and discussion section) to appreciate the difference between results and discussion along with the link between the two.
Experiential-Learning 6.4	Present an article in the journal club.	Students will present the articles allocated to them during the practical and critically review them under the guidance of the teacher.
Experiential-Learning 6.5	Review a published article by using a checklist of particular reporting guidelines.	Students will be divided into groups and each group will be assigned a different type of article. They have to check the contents of the article against the applicable reporting guidelines and present them.
Experiential-Learning 6.6	Appreciate referencing styles for different types of documents like journal articles, books, book chapters, conference proceedings, dissertations, online content, and Ayurveda medicine texts.	Students will be given different types of documents and asked to prepare referencing for the same following standard guidelines (like peer-reviewed journals).

Experiential-Learning 6.7	Acquire knowledge about various aspects of scientometry.	Students will be divided into groups and each group will search different author metrics for a minimum of 10 personalities/authors.
Experiential-Learning 6.8	Check plagiarism using online software.	Students will be divided into groups and each group will be given a topic to prepare a review and subject to plagiarism check using online free plagiarism software/ tools.

Modular Assessment

Assessment method	**Hour**
Instructions - Conduct a structured Modular assessment. Assessment will be for 25 marks per credit. Keep structured marking pattern. Use different assessment methods in each module for the semester. Keep record of the structured pattern used for assessment. Calculate the Modular grade point as per table 6 C. **Critical review of a published article.** Each student will be given a published article for review based on relevant publication guidelines. The student's review will be assessed on 1. Selection of appropriate guidelines (5 marks) 2. Review of article by ticking off the checklist (5 marks) 3. Summary of review mentioning guidelines, describing missed elements, and positive aspects of the paper (15 marks) and Any practical in converted form can be taken for assessment.(25 Marks) or Any of the experiential as portfolio/ reelections / presentations can be taken as assessment.(25 Marks)	4

Table 4 : Practical Training Activity

Practical No	Practical name	Hours
1.1	Elaborate the current status of Ayurveda medicine research	2
1.2	Demonstrate different research concepts in Ayurveda medicine systems with examples	2
1.3	Display and demonstrate literature search in medical databases	2
1.4	Enlist different ways of identifying the research problem	2
1.5	Demonstrate the qualities of good research questions using PICO/T in the clinical scenario and the FINER approach in both clinical and non-clinical scenarios, hypotheses, and objectives.	2
2.1	Identify the contents of ICMR, ICH-GCP, and GCP-Ayurveda medicine guidelines including the process of Clinical trial registration.	1
2.2	Enlist cases where the principle of autonomy and justice is upheld and compromised.	1
2.3	Enlist cases where principles of beneficence/non-maleficence are upheld and compromised	1
2.4	Construct the composition of the ethics committee through different case scenarios.	2
2.5	Revise the elements of the review process through different case scenarios	3
2.6	Identify ethical issues specific to Ayurveda medicine research through different case scenarios.	2
3.1	Demonstrate different types of research with examples	2
3.2	Differentiate methods used in qualitative research.	4
3.3	Appraise the descriptive studies in published literature – Case report	2
3.4	Differentiate the descriptive studies in published literature – Case series	2

3.5	Identify the descriptive studies in published literature – Cross-sectional study	2
3.6	Differentiate the descriptive studies in published literature – longitudinal study	2
3.7	Identify the cross-sectional analytical studies in published literature.	2
3.8	Appraise the case-control studies in published literature.	2
3.9	Appraise the cohort studies in published literature.	2
4.1	Appraise the Interventional study designs in published literature.	10
5.1	Demonstrate cell culture studies and animal procedures.	1
5.2	Explore the utility of in-vitro and in-vivo studies in the Ayurveda medicine context.	2
5.3	Demonstrate in-silico studies.	2
5.4	Review principles and applications of instruments.	2
5.5	Check the quality of a drug/formulation.	3
5.6	Explore available manuscript resources.	5
5.7	Demonstrate the process of tool development and validation.	3
5.8	Search & choose the appropriate assessment tool.	2
6.1	Demonstrate the key points of synopsis/protocol writing.	5
6.2	Appreciate the structure of the dissertation with a focus on specific requirements as per the type and design of the research.	3
6.3	Demonstrate the structure of different types of articles.	2
6.4	Access different reporting guidelines.	2
6.5	Demonstrate using any one reference manager tool.	4
6.6	Select an appropriate journal and identify its quality using scientometrics.	2

6.7	Review guidelines related to Publication ethics (WAME, COPE, ICMJE, OASPA).	2

Table 5 : Experiential learning Activity

Experiential learning No	Experiential name	Credit Hours
1.1	Identify the level of evidence in Ayurveda medicine research	2
1.2	List out the challenges and probable solutions in Ayurveda medicine research.	2
1.3	Conduct a literature search for a given scenario	3
1.4	Identify the research problem	3
1.5	Frame research questions, hypotheses, and study objectives.	3
2.1	Appraise the ethical principles by developing a case scenario.	1
2.2	Identify the ethical principles in a given case scenario.	1
2.3	Demonstrate the review process of IHEC	6
2.4	Demonstrate the review process of IAEC	5
3.1	Moderate/participate in FGD, In-depth interview.	6
3.2	Acquire the knowledge of conducting various descriptive studies in the hospital community/classroom/hostel.	10
3.3	Acquire the knowledge of conducting various observational studies.	10
4.1	Acquire the knowledge of conducting various interventional studies.	4
4.2	Acquire the knowledge of conducting various interventional studies.	4
4.3	Acquire the knowledge of conducting various interventional studies.	5
5.1	Acquaint with instrumentation and procedures related to in silico, in vitro, and in vivo studies.	6
5.2	Acquaint with pharmacy college/QC unit in Ayurveda pharmacy.	4
5.3	Acquaint with a manuscript library.	5

5.4	Develop a questionnaire.	5
5.5	Apply appropriate assessment tools in a given Ayurveda medicine scenario	3
5.6	Define a minimum of 5 Ayurveda medicine terms and compare them with standard terminology.	3
6.1	Prepare an outline of the synopsis.	3
6.2	Retrieve information about different funding agencies and their schemes especially applicable for students.	3
6.3	Critically appraise the result and discussion section of the thesis.	5
6.4	Present an article in the journal club.	4
6.5	Review a published article by using a checklist of particular reporting guidelines.	3
6.6	Appreciate referencing styles for different types of documents like journal articles, books, book chapters, conference proceedings, dissertations, online content, and Ayurveda medicine texts.	3
6.7	Acquire knowledge about various aspects of scientometry.	3
6.8	Check plagiarism using online software.	2

Table 6 : Assessment Summary: Assessment is subdivided in A to G points

6 A : Number of Papers and Marks Distribution

Subject Code	Paper	Theory	Practical	Total
AYPG-RM	1	100	NA	100

6 B : Scheme of Assessment

Credit frame work

AYPG-RM has 6 modules of 9 credits which includes 270 Notional Learning Hours. One Credit will be having 30 Hours of learner participation and teaching, practical and experiential learning will in the ratio of 1:2:3 i.e. One credit will have 5 hours of teaching, 10 hours of practical training and 13 hours of experiential learning and 2 hours of modular assessment for 25 marks.

Module wise Assessment:will be done at the end of each module. Evaluation includes learners active participation to get Credits and Marks. Each Module may contain one or more credits.
Summative Assessment: Summative Assessment (University examination) will be carried out at the end of Semester I.

6 C : Calculation Method for Modular Grade Points (MGP)

Module Number & Name (a)	Credits (b)	Actual No. of Notional Learning Hours (c)	Attended Number of notional Learning hours (d)	Maximum Marks of assessment of modules (e)	Obtained Marks per module (f)	MGP =d*f/c*e*100
1. Research Basics	1	30		25		
2. Ethics and Regulatory Aspects in Research	1	30		25		
3. Research Types - Part 1	2	60		50		
4. Research Types - Part 2	1	30		25		
5. Research Types - Part 3	2	60		50		
6. Research Communication	2	60		50		
MGP = ((Number of Notional learning hours attended in a module) X (Marks obtained in the modular assessment) / (Total number of Notional learning hours in the module) X (Maximum marks of the module)) X 100						

6 D : Semester Evaluation Methods for Semester Grade point Average (SGPA)

SGPA will be calculated at the end of the semester as an average of all Module MGPs. Average of MGPS of the Semester For becoming eligible for Summative assessment of the semester, student should get minimum of 60% of SGPA

SGPA = Average of MGP of all modules of all papers = add all MGPs in the semester/ no. of modules in the semester Evaluation Methods for Modular Assessment

A S.No	B Module number and Name	C MGP
1	Research Basics	C1
2	Ethics and Regulatory Aspects in Research	C2
3	Research Types - Part 1	C3
4	Research Types - Part 2	C4
5	Research Types - Part 3	C5
6	Research Communication	C6
	Semester Grade point Average (SGPA)	(C1+C2+C3+C4+C5 +C6) / Number of modules(6)

S. No	Evaluation Methods
1.	Method explained in the Assessment of the module or similar to the objectives of the module.

6 E : Question Paper Pattern

MD/MS AYURVEDA Examination
AYPG-RM
Sem I
Time: 3 Hours ,**Maximum Marks:** 100
INSTRUCTIONS: All questions compulsory

		Number of Questions	Marks per question	Total Marks
Q 1	Analytical based structured question (ABQ)	1	20	20
Q 2	Short answer questions (SAQ)	8	5	40
Q 3	Long answer questions (LAQ)	4	10	40
				100

Instructions for the paper setting.

1. Questions should be drawn based on the table 6F.
2. Marks assigned for the module in 6F should be considered as the maximum marks.
3. Refer table 6F before setting the questions. Questions should not be framed on the particular unit if indicated “NO”.
4. There will be a single application-based question (ABQ) worth 20 marks. No other questions should be asked from the same module where the ABQ is framed.
5. Except the module on which ABQ is framed, at least one Short answer question should be framed from each module.
6. Long answer question should be analytical based structured questions assessing the higher cognitive ability.
7. Use the Blue print provided in 6G or similar blue print created based on instructions 1 to 6.

6 F : Distribution for summative assessment (University examination)

S.No	List of Module/Unit	ABQ	SAQ	LAQ
(M-1)Research Basics Marks: (20)				
1	**(U-1)** Overview of research process and evidence-based medicine	No	Yes	No
2	**(U-2)** Research methods in Ayurveda Medicine	No	Yes	Yes
3	**(U-3)** Literature search and critical appraisal of literature	No	Yes	Yes
4	**(U-4)** Identification of research problem	Yes	Yes	No
5	**(U-5)** Research question and Hypothesis	Yes	Yes	Yes
(M-2)Ethics and Regulatory Aspects in Research Marks: (10)				
1	**(U-1)** Basics of Ethics and Ethics Guidelines	No	Yes	Yes
2	**(U-2)** Institutional Ethics Committees	No	Yes	Yes
3	**(U-3)** National Pharmacovigilance Program	No	No	No
4	**(U-4)** Scope and Importance of IPR and Patents	No	No	No
(M-3)Research Types - Part 1 Marks: (20)				
1	**(U-1)** Different types of research	No	No	No
2	**(U-2)** Qualitative Research	Yes	Yes	No
3	**(U-3)** Descriptive study designs	Yes	No	Yes
4	**(U-4)** Observational study designs	Yes	Yes	No
(M-4)Research Types - Part 2 Marks: (20)				
1	**(U-1)** Bias and ways to eliminate bias	No	Yes	No
2	**(U-2)** Randomized Controlled Trials	Yes	Yes	Yes
3	**(U-3)** Newer study designs	No	No	No
(M-5)Research Types - Part 3 Marks: (20)				
1	**(U-1)** Preclinical studies	No	Yes	Yes
2	**(U-2)** Drug research	No	Yes	Yes
3	**(U-3)** Literary research	No	Yes	Yes
4	**(U-4)** Development of tools	Yes	No	Yes
5	**(U-5)** Assessment Tools	No	Yes	Yes
(M-6)Research Communication Marks: (10)				
1	**(U-1)** Research protocol writing	No	Yes	Yes
2	**(U-2)** Dissertation contents and structure	No	Yes	No

3	**(U-3)** Types and structure of journal articles	No	Yes	Yes
4	**(U-4)** Systematic review and meta-analysis	No	No	No
5	**(U-5)** Publication guidelines	No	Yes	No
6	**(U-6)** Referencing	No	Yes	No
7	**(U-7)** Scientometrics	No	Yes	No
8	**(U-8)** Publication Ethics	No	Yes	Yes

6 G : Blue Print for Summative assessment (University Examination)

Question No	Type of Question	Question Paper Format
Q1	**Application based Questions** **1 Question** **20 marks** **All compulsory**	M1.U4, . M1.U5 M3.U2, . M3.U3, . M3.U4 M4.U2 M5.U4
Q2	**Short answer Questions** **Eight Questions** **5 Marks Each** **All compulsory**	1. M1.U1 **Or** . M1.U2 **Or** . M1.U3 2. M1.U4 **Or** . M1.U5 **Or** . M2.U1 3. M2.U2 **Or** . M3.U2 **Or** . M3.U4 4. M4.U1 **Or** . M4.U2 **Or** . M5.U1 5. M5.U2 **Or** . M5.U3 **Or** . M5.U5 6. M6.U1 **Or** . M6.U2 **Or** . M6.U3 7. M6.U5 **Or** . M6.U6 8. M6.U7 **Or** . M6.U8
Q3	**Analytical Based Structured Long answer Questions** **Four Questions** **10 marks each** **All compulsory**	1. M1.U2 **Or** . M1.U3 **Or** . M1.U5 **Or** . M2.U1 2. M2.U2 **Or** . M3.U3 **Or** . M4.U2 **Or** . M5.U1 3. M5.U2 **Or** . M5.U3 **Or** . M5.U4 **Or** . M5.U5 4. M6.U1 **Or** . M6.U3 **Or** . M6.U8

Reference Books/ Resources

S.No	References
1	https://scientific-publishing.webshop.elsevier.com/research-process/levels-of-evidence-in-research/
2	GRADE Methods in traditional medicine Jian-Ping Liu[?] Integr Med Res. 2022 Jun; 11(2): 100836. doi: 10.1016/j.imr.2022.100836
3	Evidence-based traditional medicine for transforming global health and well-being Bhushan Patwardhan[?] J Ayurveda Integr Med. 2023 Jul-Aug; 14(4): 100790. doi: 10.1016/j.jaim.2023.100790
4	Selected sections from classical texts of Ayurveda medicine
5	https://ayushportal.nic.in/
6	Health Research Fundamentals: A Companion to NIeCer 101 Course (First Edition) by P Manickam and Tarun Bhatnagar, ICMR – NIE publication, ISBN-13 979-8889359418
7	The Craft of Research, Wayne C. Booth, University of Chicago Press, ISBN-13 978-0226239736
8	Research Question, Objectives & Hypotheses KSUMSC, https://ksumsc.com › 03 - Objectives _ Hypotheses
9	A Public Documentary on the History of Research Ethics https://www.youtube.com/watch?v=9zfrpFwIwug
10	Exploitation and ethics in clinical trials https://www.youtube.com/watch?v=HOBlWaH-Owo
11	Ethics in qualitative research https://www.youtube.com/watch?v=CAquVX1bF7U
12	Franco NH. Animal Experiments in Biomedical Research: A Historical Perspective. Animals (Basel). 2013 Mar 19;3(1):238-73. doi: 10.3390/ani3010238. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4495509/
13	Kiani AK, Pheby D, Henehan G, Brown R, Sieving P, Sykora P, et.al. International Bioethics Study Group. Ethical considerations regarding animal experimentation. J Prev Med Hyg. 2022 Oct 17;63(2 Suppl 3):E255-E266. doi: 10.15167/2421-4248/jpmh2022.63.2S3.2768..https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9710398/
14	ICMR National ethical guidelines for biomedical and health research involving human participants 2017. https://ethics.ncdirindia.org/asset/pdf/ICMR_National_Ethical_Guidelines.pdf
15	ICH-GCP guidelines. https://database.ich.org/sites/default/files/ICH_E6%28R3%29_DraftGuideline_2023_0519.pdf
16	Jung SY, Kang JW, Kim TH. Monitoring in clinical trials of complementary and alternative medicine. Integr Med Res. 2021 Jun;10(2):100666. doi: 10.1016/j.imr.2020.100666. Epub 2020 Sep 23. PMID: 32989415; PMCID: PMC7510525
17	Mock Research Ethics Board: Engaging students in REBs through active learning. https://www.youtube.com/watch?v=xjg4mGfC2qA
18	M Ajanal, S Nayak, Buduru S Prasad, A Kadam, Adverse drug reaction and concepts of drug safety in Ayurveda: An overview. Journal of Young Pharmacists. 2013;5(4): 116-120. https://doi.org/10.1016/j.jyp.2013.10.001.
19	Ayushsuraksha. https://www.ayushsuraksha.com/

20	Pharmacovigilance https://aiia.gov.in/pharmacovigilance/
21	Objectionable advertisements https://aiia.gov.in/pharmacovigilance/objectionable-advertisement/
22	World Intellectual Property Organization (WIPO) https://www.wipo.int/about-ip/en/
23	Indian Patent office. https://www.ipindia.gov.in/
24	Indian Patent search https://iprsearch.ipindia.gov.in/publicsearch
25	Cadbury v Nestlé: The Kit Kat trademark war explained. Read more at: https://www.campaignindia.in/article/cadbury-v-nestle-the-kit-kat-trademark-war-explained/420468
26	Kothari CR (2004).Research Methodology –Methods and Techniques(Second Revised Edition).New Age International Publishers-New Delhi,Page -185
27	**Mack N. Qualitative research methods: A data collector's field guide. North Carolina, USA: Family Health International;2005**
28	R Bonita, R Beaglehole, T Kjellström. Basic epidemiology *2nd edition.* WHO Library Cataloguing-in-Publication Data. World Health Organization 2006
29	MKC Nair, Remadevi S, Anish TS Harikumaran Nair GS, Ajith Kumar K, Leena ML. Editors. An Introduction to Research Methodology. Kerala University of Health Sciences Thrissur, Kerala, 2017
30	M. C. Sobhana. Editor., Ergonomics in Ayurveda, Vaidyaratnam P.S.Varier Ayurveda College, Kottakkal, 2014
31	Ross C. Brownson, Diana B. Petitti. Editors. Applied Epidemiology- Theory to Practice. Edited by, New York, Oxford University Press 1998
32	John W. Creswell. Research design: qualitative, quantitative, and mixed methods approach. 4th ed. SAGE Publications India Pvt. Ltd.
33	Dona Schneider, David E. Lilienfeld editors. Lilienfeld's Foundations of Epidemiology. Oxford University Press 2015, 4th ed
34	Study designs: Part 4 – Interventional studies, Rakesh Aggarwal and Priya Ranganathan, Perspect Clin Res. 2019 Jul-Sep; 10(3): 137–139. doi:10.4103/picr.PICR_91_19
35	https://www.nccih.nih.gov/grants/pilot-studies-common-uses-and-misuses
36	https://ebooks.inflibnet.ac.in/socp3/chapter/pilot-study-and-pre-test/
37	https://www.youtube.com/@tejastech2015
38	Sanjeev Rastogi *Editor*. Translational Ayurveda. A. R. Baydoun. Cell culture techniques. https://www.cambridge.org/core.
39	Guide for the care and use of Laboratory animals. Eighth Edition. The National Academies Press, Washington, DC, 2011
40	Analytical Procedures and Methods Validation for Drugs and Biologics- Guidance for Industry. U.S. Department of Health and Human Services, Centre for Drug Evaluation and Research (CDER) July 2015

41	https://www.igntu.ac.in/eContent/IGNTU-eContent-857627652716-MSW-2-Dr.HanjabamShukhdebaSharma-SOCIALWORKRESEARCH-1,2,3,4,5.pdf
42	WHO international standard terminologies on Ayurveda. Geneva: World Health Organization; 2022. Licence: CC BY-NC-SA 3.0 IGO, ISBN 978-92-4-006493-5 (electronic version), ISBN 978-92-4-006494-2 (print version)
43	WHO international standard terminologies on Siddha medicine. Geneva: World Health Organization; 2022. Licence: CC BY-NC-SA 3.0 IGO.ISBN 978-92-4-006497-3 (electronic version), ISBN 978-92-4-006498-0 (print version)
44	WHO international standard terminologies on Unani medicine. Geneva: World Health Organization; 2022. Licence: CC BY-NC-SA 3.0 IGO ISBN 978-92-4-006495-9 (electronic version), ISBN 978-92-4-006496-6 (print version)
45	http://ccras.nic.in/content/national-ayush-morbidity-and-standardized-terminologies-portal-namstp
46	Thrigulla, Saketh Ram & Narayanam, Srikanth. (2023). Initiatives: National Ayush Morbidity and Standardized Terminologies Electronic (NAMASTE) Portal. Journal of Ayurveda and Integrative Medicine. 14. 100781. 10.1016/j.jaim.2023.100781.
47	https://icd.who.int/en
48	Masic I, Milinovic K. On-line biomedical databases-the best source for quick search of the scientific information in the biomedicine. *Acta Inform Med*. 2012;20(2):72-84. doi:10.5455/aim.2012.20.72-84
49	Basic Structure of Synopsishttps://search.app/9Y6iB974ZySGHJZJ6https://www.who.int/groups/research-ethics-review-committee/recommended-format-for-a-research-protocol https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5198475/
50	Research Synopsis Guidelines 2015https://www.researchgate.net/publication/279917593_Research_synopsis_guidelines
51	Protocol Writinghttps://search.app/GyFGM2kKvfNGtSdCA
52	Funding Agencieshttps://search.app/EGkbqnNKspfvZu2d7https://search.app/hoaKGNf2EYbHdibh7 https://search.app/7Dnxm2MVLPDqDwdR7
53	Videohttps://www.youtube.com/watch?v=4UZNYFOqFwk
54	Medical dissertation basics: analysis of a course of study for medical studentshttps://www.ncbi.nlm.nih.gov/pmc/articles/PMC9174066/
55	Subhash Chandra Parija, Vikram Kate. Thesis Writing for Master's and Ph.D. Program. Editors. Springer Nature Singapore Pte Ltd. 2018
56	E-Repository Shodhgangahttps://shodhganga.inflibnet.ac.in/
57	Tips and tricks for writing a scientific manuscripthttps://pubmed.ncbi.nlm.nih.gov/33261307/
58	Dissertation discussion chapter – how to plan, structure and write ithttps://youtu.be/N57UpjRr2BA?si=ZGRr3aZwfeF5VAZX

59	How to write a dissertation conclusion chapter - 4 key structure sections with examples & questionshttps://youtu.be/taLnJ5tuxlY?si=EnQp6u9vhOg4Gq_zhttps://youtu.be/ZIe0wV4Z_U8?si=NG-Lge8JMn7VwxZy
60	Explain the structure of different types of journal articleshttps://www.springer.com/gp/authors-editors/authorandreviewertutorials/writing-a-journal-manuscript/types-of-journal-articles/10285504https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8167915/ https://www.researchgate.net/publication/349198216_How_many_types_of_research_articles https://youtu.be/xSmBT7_UUEk?si=B-sMEWPbSlbAaY8Zhttps://www.springer.com/gp/authors-editors/journal-author
61	Structure of different types of journal articleshttps://www.youtube.com/watch?v=NfyMD8g5jfk https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8167915/
62	Introduction to systematic review and meta-analysisEunJin Ahn, Hyun Kang Korean J Anesthesiol. 2018 Apr; 71(2): 103–112. doi: 10.4097/kjae.2018.71.2.103
63	htt ps:// main.icmr .nic.in/sites/default/ files/upload_documents/BEGINNERS_ GUIDE_FINAL_BOOK.pdfhttps://guides.library.harvard.edu/meta-analysis
64	Guidelineshttps://www.equator-network.org/
65	CONSORT GUIDELINEhttps://www.equator-network.org/reporting-guidelines/consort/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6398298/
66	STROBE Guidelinehttps://www.equator-network.org/reporting-guidelines/strobe/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6398292/
67	PRISMA Guidelinehttps://www.equator-network.org/reporting-guidelines/prisma/ https://search.app/Y6P4HK2k6jpjxwbv7https://pubmed.ncbi.nlm.nih.gov/36233208/ https://youtu.be/HKToL6M7tbE?si=CulIac3FZl7DV1ln
68	ARRIVE Guidelineshttps://www.equator-network.org/reporting-guidelines/improving-bioscience-research-reporting-the-arrive-guidelines-for-reporting-animal-research/https://pubmed.ncbi.nlm.nih.gov/32663219/ https://youtu.be/CIP0Tz7MEPc?si=ilmXfrrE2CQ506Wc
69	CARE Guidelineshttps://www.equator-network.org/reporting-guidelines/care/ https://pubmed.ncbi.nlm.nih.gov/28529185/
70	Variation & different reporting guidelineshttps://youtu.be/n9BPxEzjWrI?si=4o9wyQm2I2JmQYCF https://youtu.be/2gB0wtwjkos?si=6uh9Ypttvyik8J2q https://www.nlm.nih.gov/services/research_report_guide.html https://onlinecourses.swayam2.ac.in/nou24_ge73/preview

71	Preserving the Integrity of Citations and References by All Stakeholders of Science Communicationhttps://pubmed.ncbi.nlm.nih.gov/26538996/
72	The accuracy of references in PhD theses: a case studyhttps://pubmed.ncbi.nlm.nih.gov/23981024/
73	The prevalence and inaccessibility of Internet references in the biomedical literature at the time of publicatio nhttps://pubmed.ncbi.nlm.nih.gov/17213493/https://www.ncbi.nlm.nih.gov/books/NBK7267/https://www.n cbi.nlm.nih.gov/pmc/articles/PMC9997612/Demonstrate using any one reference manager tool.
74	How To Use Microsoft wordhttps://youtu.be/N2yWk0Dlpt4?si=9NIsbHiBLR6vwptw
75	How To Use Zoterohttps://www.youtube.com/watch?v=tnbwKj6-pD8https://www.youtube.com/watch?v=JG7Uq_JFDzE
76	How To Use Mendeleyhttps://www.youtube.com/watch?v=PJXnfBSq4Lg
77	WASP (Write a Scientific Paper): The use of bibliographic management softwarehttps://pubmed.ncbi.nlm.nih.gov/30241900/
78	Reference management: A critical element of scientific writinghttps://pubmed.ncbi.nlm.nih.gov/26952149/Referencing Style
79	Vancouver referencing stylehttps://youtu.be/C_wk3L8u7o0?si=ZTskxMdYoGMHeI-EHow to cite and reference a journal articlehttps://youtu.be/MLwEHV_gqUE?si=hPInyXL4rA_ZkrT1https://www.youtube.c om/watch?v=XpkL0y1PjF0
80	Journal impact factorshttps://link.springer.com/article/10.1007/s00005-021-00621-w
81	Cite score-https://rdcu.be/dOM73https://www.youtube.com/watch?v=Ui_X30Dqrzk
82	Authors impact metricshttps://www.ncbi.nlm.nih.gov/pmc/articles/PMC9595167/
83	Quality verification using scientometrics- https://doi.org/10.1016/j.joi.2018.05.001
84	Various aspects of scientometry-https://youtu.be/9Qq_8 FHKpc?si=Wm0mgwFyGcQRBV6P https://youtu.be/NZBMXkNdn2Y?si=sj2xxBVbjOMngcX1https://pubmed.ncbi.nlm.nih.gov/33583970/
85	Publication ethics videoshttps://youtu.be/LmMDIBENHhU?si=k5KH3fThr0ITN4wm https://youtu.be/oieXfTtPDdM?si=rrpKZG7NXFXWJfwp
86	Authorship Criteria PDF https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9 122129/https://stmjournals.com/pdf/Author-Guidelines-stmjournals.pdf
87	WAME review guidelinehttps://wame.org/recommendations-on-publication-ethics-policies-for-medical-journals
88	COPE guidelinehttps://publicationethics.org/guidance/Guidelines
89	Falsification and fabrication of datahttps://scientific-publishing.webshop.elsevier.com/manuscript-review/research-fraud-falsification-and-fabrication-research-data/https://www.ncbi.nlm.nih.gov/books/NBK214564/?report=reader

90	ICMJE and OSPAhttps://www.icmje.org/recommendations/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3192379/
91	Publication process https://www.youtube.com/watch?v=GQepuG1yX-8
92	World's biggest Online Collection of Indian Manuscripts & Antique Bookshttps://indianmanuscripts.com/ayurveda-manuscripts
93	Gujarat Ayurveda University, Digital Ayurvedic Manuscripts Databasehttp://www.ayurvedamanuscripts.com/index.php
94	National Center of Indian Medical Heritage, AYUSH Manuscripts Advanced Repository (AMAR) https://niimh.nic.in/amar/index.php
95	R Bonita, R Beaglehole, T Kjellström. Basic epidemiology *2nd edition.* WHO Library Cataloguing-in-Publication Data. World Health Organization 2006
96	**Mack N. Qualitative research methods: A data collector's field guide. North Carolina, USA: Family Health International;2005**
97	Ross C. Brownson, Diana B. Petitti. Editors. Applied Epidemiology- Theory to Practice. Edited by, New York, Oxford University Press 1998
98	Bilal Ahmad Wani, Shaheen Ahmad Mir.Basics of Research Methodology and Medical Statistics for Ayurveda Scholars.Ayurveda Sanskrit Pustak Bhandaar , Jaipur Page -95 ISBN-978-93-84277-8-5
99	Ranjith Kumar. Research Methodology a step- by -step guide for beginners:(Third Edition) SAGE Publications Ltd Page -92ISBN 978-1-84920-300-5
100	John W. Creswell. Research design: qualitative, quantitative, and mixed methods approach. 4th ed. SAGE Publications India Pvt. Ltd.
101	Dona Schneider, David E. Lilienfeld editors. Lilienfeld's Foundations of Epidemiology. Oxford University Press 2015, 4th ed
102	Laake P, Benestad HB, Olsen BR, editors. Research methodology in the medical and biological sciences. Academic Press; 2007 Nov 5. Page -71,ISBN: 978-0-12-373874-5
103	Research Methods in Community Medicine: Surveys, Epidemiological Research, Programme Evaluation, Clinical Trials,Sixth Edition. J. H. Abramson and Z. H. Abramson © 2008 John Wiley & Sons Ltd. ISBN: 978-0-470-98661-5
104	Bhide A, Shah PS, Acharya G. A simplified guide to randomized controlled trials. Acta Obstetricia et Gynecologica Scandinavica. 2018;97(4):380–7. Available from:https://doi.org/10.1111/aogs.13309
105	Jagannatha S. Manuscriptology: An entrance. 1st ed. New Delhi: Parimal publications; 1996
106	Shivaganesha Murthy R S. Introduction to Manuscriptology. 1st ed. New Delhi: Sharada Publishing House; 1996

Abbreviations

Domain	
CK	Cognitive/Knowledge
CC	Cognitive/Comprehension
CAP	Cognitive/Application
CAN	Cognitive/Analysis
CS	Cognitive/Synthesis
CE	Cognitive/Evaluation
PSY-SET	Psychomotor/Set
PSY-GUD	Psychomotor/Guided response
PSY-MEC	Psychomotor/Mechanism
PSY-ADT	Psychomotor Adaptation
PSY-ORG	Psychomotor/Origination
AFT-REC	Affective/ Receiving
AFT-RES	Affective/Responding
AFT-VAL	Affective/Valuing
AFT-SET	Affective/Organization
AFT-CHR	Affective/ characterization
T L Method	
L	Lecture
L&PPT	Lecture with PowerPoint presentation
L&GD	Lecture & Group Discussion
L_VC	Lecture with Video clips
REC	Recitation
SY	Symposium
TUT	Tutorial
DIS	Discussions
BS	Brainstorming
IBL	Inquiry-Based Learning
PBL	Problem-Based Learning

CBL	Case-Based Learning
PrBL	Project-Based Learning
TBL	Team-Based Learning
TPW	Team Project Work
FC	Flipped Classroom
BL	Blended Learning
EDU	Edutainment
ML	Mobile Learning
ECE	Early Clinical Exposure
SIM	Simulation
RP	Role Plays
SDL	Self-directed learning
PSM	Problem-Solving Method
KL	Kinaesthetic Learning
W	Workshops
GBL	Game-Based Learning
LS	Library Session
PL	Peer Learning
RLE	Real-Life Experience
PER	Presentations
D-M	Demonstration on Model
PT	Practical
X-Ray	X-ray Identification
CD	Case Diagnosis
LRI	Lab Report Interpretation
DA	Drug Analysis
D	Demonstration
D-BED	Demonstration Bedside
DL	Demonstration Lab

DG	Demonstration Garden
FV	Field Visit
JC	Journal Club
Mnt	Mentoring
PAL	Peer Assisted Learning
C_L	Co Learning
DSN	Dissection
PSN	Prosection