PG PROGRAMME

AYURVEDA VACHASPATHI
MD (AYU) SAMHITHA AND SIDDHANTHA

FACULTY OF MEDICAL SCIENCES
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PROGRAMME OUTCOME:

PO1: Critical knowledge about the CARAKA Samhita.
PO2: Critical knowledge about Sushruta Samhita.
PO3: Critical knowledge about Ashtanga hridaya samhitha.
PO4: Knowledge about the philosophical principles incorporated in samhithas.
PO5: Knowledge about the history of Ayurveda, Departments of Ayurveda in India.

PROGRAMME SPECIFIC OUTCOME:

PSO1: Ability to teach the subject.
PSO2: Ability to do research in fundamental principles of Ayurveda.
PSO3: Good awareness about the government departments of Ayurveda.
PSO4: Good knowledge about the Journals, Types of review articles.
**CURRICULUM STRUCTURE:** 3 years

First year courses

<table>
<thead>
<tr>
<th>Course code with name</th>
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<tbody>
<tr>
<td>1  Research Methodology &amp; Biostatistics</td>
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<tr>
<td>2.1 Ayurveda Samhitha &amp; Sidhantha</td>
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Second and third year courses

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<thead>
<tr>
<th>Course code with name</th>
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<tbody>
<tr>
<td>2.1.1 Charaka</td>
</tr>
<tr>
<td>2.1.2 Sushruta &amp; Vagbhata</td>
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<td>2.1.3 Darshanika Siddhanta</td>
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<td>2.1.4 Prayogika Siddhant</td>
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M.D./M.S.-AYURVEDA PRELIMINARY
PAPER-I
RESEARCH METHODOLOGY AND MEDICAL STATISTICS

PART-A
RESEARCH METHODOLOGY
1 Introduction to Research
Definition of the term research
Definition of the term anusandhan.
Need of research in the field of Ayurveda
2. General guidelines and steps in the research process
Selection of the research problem
Literature review: different methods (including computer database) with their advantages and limitations
Defining research problem and formulation of hypothesis
Defining general and specific objectives
Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
Sample design
Collection of the data
Analysis of data.

Generalization and interpretation, evaluation and assessment of hypothesis.
Ethical aspects related to human and animal experimentation.
Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics.

3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.

4. Scientific writing and publication skills.

Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
Different types of referencing and bibliography.
Thesis/Dissertation: contents and structure
Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)

5. Classical Methods of Research.

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.
Dravya-, Guna-, Karma-Parikshana Paddhati
Aushadhi-yog Parikshana Paddhati
Swastha, Atura Pariksha Paddhati
Dashvidha Parikshya Bhava
Tadvidya sambhasha, vadmarga and tantrayukt

6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.

7. Different fields of Research in Ayurveda
   Fundamental research on concepts of Ayurveda
   Panchamahabhuta and tridosha.
   Concepts of rasa, guṇa, virya, vipak, prabha and karma
   Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshtha.

8. Literary Research-
   Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.
   Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.

9. Drug Research (Laboratory-based)- Basic knowledge of the following:
   Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.
   Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).


11. Introduction to latest Trends in Drug Discovery and Drug Development
   -Brief information on the traditional drug discovery process
   -Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and network physiology
   -Brief introduction to the process of Drug development

12. Clinical research:
Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda
Basic knowledge of the following:-
Observational and Interventional studies
Descriptive & Analytical studies
Longitudinal & Cross sectional studies
Prospective & Retrospectives studies
Cohort studies
Randomized Controlled Trials (RCT) & their types
Single-case design, case control studies, ethnographic studies, black box design, cross-over
design, factorial design.
Errors and bias in research.
New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)
Phases of Clinical studies: 0,1,2,3, and 4.
Survey studies -
Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in-
depth interview and Focus Group Discussion.

Pharmacovigilance Programme for ASU drugs.

Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.

15. Intellectual Property Rights- Different aspect and steps in patenting. Information on
Traditional Knowledge Digital Library (TKDL).

PART–B
MEDICAL STATISTICS
1. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in
Ayurveda

2. Collection, classification, presentation, analysis and interpretation of data (Definition,
utility and methods)

3. Scales of Measurements - nominal, ordinal, interval and ratio scales.
Types of variables – Continuous, discrete, dependent and independent variables.
Type of series – Simple, Continuous and Discrete


5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile,
Mean deviation and Standard deviation

5. Probability: Definitions, types and laws of probability,

7. Fundamentals of testing of hypotheses:
   Null and alternate hypotheses, type I and type 2 errors.
   Tests of significance: Parametric and Non-Parametric tests, level of significance and power of the test, ‘P’ value and its interpretation, statistical significance and clinical significance

8. Univariate analysis of categorical data:
   Confidence interval of incidence and prevalence, Odds ratio, relative risk and Risk difference, and their confidence intervals


10. Non parametric methods: Chi-square test, Fisher’s exact test, McNemar’s test, Wilcoxon test, Mann-Whitney U test, Kruskall – Wallis with relevant post hoc tests (Dunn)

11. Correlation and regression analysis:
   Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson’s correlation co-efficient, Spearman’s rank correlation.
   Regression- simple and multiple.

12. Sampling and Sample size computation for Ayurvedic research:

13. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics

14. Familiarization with the use of Statistical software like SPSS/Graph Pad

PRACTICAL

I. RESEARCH METHODOLOGY

PRACTICAL NAME

1. Pharmaceutical Chemistry
   Familiarization and demonstration of common lab instruments for carrying out analysis as per API
2. Awareness of Chromatographic Techniques
Demonstration or Video clips of following:

Thin-layer chromatography (TLC).
Column chromatography (CC).
Flash chromatography (FC)
High-performance thin-layer chromatography (HPTLC)
High Performance (Pressure) Liquid Chromatography (HPLC)
Gas Chromatography (GC, GLC)

3. Pharmacognosy
Familiarization and Demonstration of different techniques related to:-
Drug administration techniques - oral and parenteral.
Blood collection by orbital plexuses puncturing.
Techniques of anesthesia and euthanasia.
Information about different types of laboratory animals used in experimental research
Drug identification as per API including organoleptic evaluation

4. Pharmacology and Toxicology
Familiarization and demonstration of techniques related to pharmacology and toxicology

5. Biochemistry (Clinical)
Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry.
Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and microalbumin estimation by nephelometry or other suitable techniques.
Interpretation of the results obtained in the light of the data on normal values.

6. Clinical Pathology
Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.

7. Imaging Sciences
Familiarization and demonstration of techniques related to the imaging techniques.
Video film demonstration of CT-Scan, MRI-scan and PET-scan.

8. Clinical protocol development
II. MEDICAL STATISTICS

Practical hours: 20

Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.
Records to be prepared.

Distribution of marks (practical):

- Instrumental spotting test – 20 marks
- Clinical protocol writing exercise on a given problem – 20 marks

Records:
- Research methodology -10 Mark
- Medical statistics -10 marks
- Viva- Voce -40 Marks

REFERENCE BOOKS:-

Pharmacognosy:

Trease G E and Evans W C, Pharinacognosy, Bailliere Tindall, Eastbourne, U K.

Pharmaceutical chemistry, quality control and drug standardization:

HPTLC- Fingerprint atlas of Ayurvedic Single Plant Drugs mentioned in Ayurvedic Pharmacopoeia Vol- III and IV. CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA. New Delhi.
Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants -INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste,
Biochemistry and Laboratory techniques:

Asokan P. (2003) Analytical Biochemistry, China publications,
Harold Varley. Practical Clinical Bio-chemistry
GradWohl, Clinical Laboratory-methods and diagnosis, Vol-I
Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002

Research methodology:

Ayurvediya Anusandhan Paddhati – P.V. Sharma
Day R.A. How to write a scientific paper. Cambridge University Press.
Cooray P.G. Guide to scientific and technical writing.

Relevant portions of Ayurvedic Samhitas and other texts

Drug research and development:

WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
Gazette Extraordinary Part- II-Section 3 - Sub section (i) December 2008. Govt of India.
AYUSH Guidelines on safety studies- Rule 170 of Drugs and Cosmetics Act.
OECD Series on Principles of Good Laboratory Practice (GLP) and Compliance Monitoring, 1998.
http://www.oecd.org/document/63/0,2340,en_2649_34381_2346175_1_1_1_1,00.html
Biotechnology and Bio-informatics:

Satyanarayana, U.: Biotechnology, Books and Allied (P) Ltd, Kolkata, 2005
http://www.iitb.ac.in/~crnts.
www.consort-statement.org
www.strobe-statement.org
www.icmr.nic.in
Clinical Evaluation:

William C. Scheffer Introduction to Clinical Researchs
Medical Statistics:

Bradford Hill – Basic Medical Statistics
Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
Suhas Kumar Shetty- Medical statistics made easy
M.D.-AYURVEDA PRELIMINARY

1. AYURVED SAMHITA & SIDDHANTA (Ayurvedic Compendia & Basic Principles)

Learning and Teaching methodology available in Samhita- Tantrayukti, Tantraguna, Tantradosha, Tachchilya, Vadamarga, Kalpana, Arthashraya, Trividha Gyanopaya, teaching of Pada, Paada, Shloka, Vakya, Vakyarthya, meaning and scope of different Sthana and Chatushka of Brihatrayee.

Manuscriptology - Collection, conservation, cataloguing, Critical editing through collation, reception (A critical revision of a text incorporating the most plausible elements found in varying sources), emendation (changes for improvement) and textual criticism (critical analysis) of manuscripts.

Publication of edited manuscripts.

Concept of Bija chatustaya (Purush, Vyadhi, Kriyakaal, Aushadha according to Sushrut Samhita).


Importance and utility of Samhita in present era.

Importance of ethics and principles of ideal living as mentioned in Samhita in the present era in relation to life style disorders.

Interpretation and co-relation of basic principles with contemporary sciences.

PART-B

Definition of Siddhanta, types and applied examples in Ayurveda.

Ayu and its components as described in Samhita.

Principles of Karana-Karyavada, its utility in advancement of research in Ayurveda.

Theory of Evolution of Universe (Srishti Utpatti), its process according to Ayurveda and Darshana.

Importance and utility of Triskandha (Hetu, Linga, Aushadh) and their need in teaching, research and clinical practice.

Applied aspects of various fundamental principles: Tridosha, Triguna, Purusha and Atmanirupana, Shatpadartha, Ahara-Vihara. Scope and importance of Pariksha (Pramana).

Importance of knowledge of Sharir Prakriti and Manas Prakriti.

Comparative study of Principles of Ayurveda and Shad Darshanas.

REFERENCE BOOKS:-

1. Charak Samhita Chakrapani commentary
2. Sushrut Samhita Dalhana Commentary
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<tr>
<th></th>
<th>Title</th>
<th>Commentary</th>
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<tr>
<td>3</td>
<td>Ashtanga Samgraha</td>
<td>Indu commentary</td>
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<td>4</td>
<td>Ashtanga Hridaya</td>
<td>Arundutta and Hemadri commentary</td>
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<tr>
<td>5</td>
<td>Vaisheshika Darshan</td>
<td>Prashastapada Bhasya</td>
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<td>6</td>
<td>Nyaya Darshan</td>
<td>Vatsyayan Bhasya Patanjala</td>
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<td>7</td>
<td>Yoga Darshan</td>
<td>Vyas Bhasya</td>
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<td>8</td>
<td>Vedantsara</td>
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<td>9</td>
<td>Sarvadarshan Samgraha</td>
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<td>10</td>
<td>Bhartiya Darshan</td>
<td>Baldev Upadhayaya</td>
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<td>11</td>
<td>Ayurved Darshan</td>
<td>Acharya Rajkumar Jain</td>
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FINAL YEAR COURSES

1. AYURVED SAMHITA & SIDDHANT

PAPER – I Charak Samhita
1. Charak Samhita complete with Ayurved Dipika commentary by Chakrapani.
2. Introductory information regarding all available commentaries on Charak Samhita

PAPER – II Sushrut Samhita & Ashtang-Hridayam
3. Introductory information regarding all available commentaries on Sushrut Samhita and Ashtang Hridaya.

PAPER – III Ayurvediya and Darshanika Siddhanta
Introduction and description of philosophical principles incorporated in Charak Samhita, Sushrut Samhita, Ashtanga Hridya, shtang Samgraha.
1. Analysis of principles specially loka-purusha samya, Shadpadartha, Praman, Srishti Utpatti, Panchmahabhuta, Pilupaka, Pitharpaka Karana- Karyavada, Tantrayukti, Nyayas (Maxims), Atmatatva siddhant.
2. Importance of Satkaryavad, Arambhavada, Parmanuvada Swabhavoparamvada, Swabhava Vada, Yadricha Vada, Karmvada.
3. Practical applicability principles of Samkhya- Yoga, Nyaya-Vaisheshika, Vedanta and Mimansa.

PAPER – IV Ayurved Itihas and Prayogika Siddhant.
2. Globalisation of Ayurved.
3. Introduction of department of AYUSH, CCIM, CCRAS, RAV.
4. Tridosh Siddhant.
5. Panchabhatuk Siddhant
7. Naishthiki Chikitsa.

8. Practical applicability principles of Charvak, Jain & Baudha Darshana.


Practical- Viva-voce - 100 Marks

(50 case sheets are to be filled from samhita siddhant IPD / OPD

Reference Books

1. Charak Samhita with Chakrapani commentary.

2. Sushruta Samhita with Dalhana Commentary.

3. Ashtanga Samgraha with Sarvangsundara.

4. Ashtanga Hridaya with Sarvanga sundara.

5. Vaisheshika Darshan – Prashastapada Bhasya

6. Nyaya Darshan - Vatsyayan Bhasya Patanjala

7. Yoga Darshan- Vyas Bhasya

8. Vedantsara

9. Sarvadarshan Samgraha


PG Final Year Syllabus-2

13. Ayurvediy Jeevak Su -Dr O.P. Upadhyay.


15. Scientific Exploration of Ayurved – Dr. Sudhir Kumar.

2. AYURVEDA SAMHITA & SIDHANTA (Basic Principles)

Astanga Hridaya, Charaka (P,U), Padartha Vignana & Ayurveda Ithihasa, Sanskrit

1 Dr. B. P. Pandey Group leader

2 Dr. Mahesh Vyas Coordinator - Coordinator -

3 Dr. B. L. Gaur Samhitha & Siddantha U.G. & P.G.

4 Dr. O. P. Upadhyaya Samhitha & Siddantha U.G. & P.G.

5 Dr. H. P. Sharma Samhitha & Siddantha U.G. & P.G.

6 Dr. S.L. Sharma Samhitha & Siddantha U.G. & P.G.

7 Dr. R. D. Thakkur Samhitha & Siddantha U.G. & P.G.
Course outcomes

CO1: knowledge in learning and teaching methodology of Ayurveda

CO2: Knowledge in analysis and critical study of different concepts of Charaka samhita, Sushruta Samhita and Ashtanga Hridaya

CO3: Familiarisation of commentaries of brihatrayees

CO4: knowledge in Manuscript studies, influence of philosophical concepts on Ayurveda
Evaluation Scheme

The post-graduate degree course shall have two examinations in the following manner, namely:-

(a) the preliminary examination shall be conducted at the end of one academic year after admission;

(b) the final examination shall be conducted on completion of three academic years after the admission to postgraduate course;

(c) examination shall ordinarily be held in the month of June or July and November or December every year;

(d) for being declared successful in the examination, student shall have to pass all the subjects separately in Preliminary examination;

(e) the student shall be required to obtain minimum fifty per cent. marks in practical and theory subjects separately to be announced as pass;

(f) if a student fails in preliminary examination, he shall have to pass before appearing in the final examination;

(g) if the student fails in theory or practical in the final examination, he can appear in the subsequent examination without requiring to submit a fresh dissertation;

(h) the subsequent examination for failed candidates shall be conducted at every six months interval; and

(i) the post-graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

(2) The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the specialty and his fitness to work independently as a specialist.

(3) The clinical examination shall be judge the competence of the student in Ayurveda and scientific literature of the specialty.

(4) The viva-voce part of the practical examination shall involve extensive discussion on any aspect of subject or specialty.