



**BHARATI VIDYAPEETH  
(DEEMED TO BE UNIVERSITY), PUNE**

**FACULTY OF AYURVED  
MS - SHALAKYA TANTRA  
New Syllabus**



**BHARATI VIDYAPEETH**  
**(DEEMED TO BE UNIVERSITY) PUNE, INDIA.**

**FACULTY OF AYURVED**

**Pune- Satara Road, Pune-411043.**

**SHALAKYA TANTRA**

*Accredited with 'A+' Grade (2017) by NAAC.*

*'A' Grade University status by MHRD, Govt. of India*

*Accredited (2004) & Reaccredited (2011) with 'A' Grade by NAAC.*

**Post- Graduate (M.D./M.S./Diploma in Ayurved)**

**Syllabus/ Curriculum**

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## **Preface**

Ayurveda is accepted worldwide as one of the oldest traditional systems of medicine. The ancient insight in this traditional system of medicine is still not profoundly discovered. Ayurveda signifies as "the life-science " where ayur means "life" and veda means "science" in Sanskrit. Ayurveda is the upaveda i.e. "auxiliary knowledge of Atharvaveda in Vedic tradition with its prime origin from Atharva-Veda and a supplement of the Rig-Veda. Lord Dhanvantari is worshipped as the God of Ayurveda. The goal of this traditional medicine system is to prevent illness, disease cure and preserve life. Being originated in India Ayurveda extends its wings in various parts of the world. In ancient days Ayurveda was taught in Gurukula system, which is now evolved in to post graduate courses from Institutions.

The Indian Medical Council was set up in 1971 by the Indian government to establish maintenance of standards for undergraduate and postgraduate education. It establishes suitable qualifications in Indian medicine and recognizes various forms of traditional practice including Ayurveda.

Ayurvedic practitioners also work in rural areas, providing health care to the million people in India alone. They therefore represent a major force for primary health care, and their training and placement are important to the government of India. Being a scientific medicine, Ayurveda has both preventive and curative aspects. The preventive component emphasizes the need for a strict code of personal and social hygiene, the details of which depend upon individual, climatic, and environmental needs.

The Bachelor of Ayurvedic Medicine and Surgery, MD/MS in various discipline of

Ayurveda started with the intention to encourage integrated teaching and de-emphasize compartmentalization of disciplines so as to achieve horizontal and vertical integration in different phases which helps to support National Health Services.

Looking into the health services provided to the public, understanding the need of practitioners of Ayurvedic system of medicine, as per the guidelines of apex body National Council of Indian system of Medicine (formerly CCIM) and suggestions provided by the faculty of various Specialties, stake holders and strategy of University this governance is framed

based on following aims and objectives -

### **Aims and objectives-**

The aims of the post-graduate degree courses shall be to provide orientation of specialties and super-specialties of Ayurveda, and to produce experts and specialists who can be competent and efficient teachers, physicians, surgeons, gynaecologists and obstetricians (Stri Roga and Prasuti Tantragraha), pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

## **Faculty of Ayurved, Bharati Vidyapeeth (Deemed to be University), Pune**

### **Vision-**

To be a world class university for social transformation through dynamic education

### **Mission-**

- To ensure the good health and longevity of mankind.
- To carve a niche for our college in the world of Ayurved education
- To provide
  - Borderless access to Ayurved education
  - Quality Ayurved education
- To promote
  - Quality research in diverse areas of health care system.
  - Extensive use of ICT for teaching, learning and governance.
  - To develop national and international networks with industry and other academic and research institutions.

## **Program Outcomes For Post Graduate Courses in Ayurved-**

- PG degree holder should be expert and specialist of his/ her branch who can be competent and efficient teacher, physician, surgeon, gynaecologist and obstetrician (Stri Roga and Prasuti Tantragrahya), pharmaceutical expert, researcher and profound scholar in various fields of specialization of Ayurved.
- Should be having knowledge of Concept of Good clinical practices in Ayurved and modern medicine

### **Course specific outcomes**

#### **M. S – Ayurved Dhanvantari in**

##### **1. PRASUTI TANTRA & STREEROGA [OBSTETRICS AND GYNECOLOGY]**

- To be able to manage normal and complicated Pre-natal, Intra partum and Post natal cases by integrative approach
- To be able to manage all types of gynecological disorders at every epoch of womanhood.
- To be able to perform all kinds of Ayurvedic procedures and surgical procedures related to Stree roga and Prasutitantra
- To have knowledge of medico legal aspects of obstetrics and gynecology.

#### **M. S – Ayurved Dhanvantari in**

##### **2. SHALAKYA TANTRA [NETRA, SHIRO, NASA, KARNA, KANTHA, MUKHA]**

- To be able to manage all cases of E.N.T. and ophthalmology by integrative approach.
- To be able to perform all kinds of Ayurvedic procedures and surgical procedures related to Shalakyatantra
- To have knowledge of medico legal aspects of Shalakyatantra

#### **M. S – Ayurved Dhanvantari in**

##### **3. SHALYA TANTRA [GENERAL SURGERY]**

- To be able to manage all surgical cases by integrative approach
- To be able to perform all kinds of Ayurvedic procedures and general surgical procedures
- To have adequate knowledge of Anushashtra – Ksharkarma and prayoga, Agnikarma [thermo therapy], Raktamokshan [bloodletting] or Asthisandhi evam marma vigyan [orthopedic] or Sangyahan [Anesthesiology] or Mootraroga [Urology]
- To have knowledge of medico legal aspects of Shalyatantra

## **M.D.- Ayurved Vachaspati in**

### **1. AYURVED SAMHITA & SIDDHANT**

- to have profound knowledge of Charak Samhita, Sushrut Samhita & AshtangHridayam, Ayurvediya and Darshanika Siddhanta with commentaries
- to be able to interpret philosophical principles incorporated in Charak Samhita, Sushrut Samhita, Ashtanga Hridaya, Ashtang Samgraha.
- To able to understand Practical applicability of principles of samhita and a competent Ayurved physician
- Competency in fundamental research

## **M.D.- Ayurved Vachaspati in**

### **2. RACHANA SHAARIRA**

- Should have thorough knowledge and competency in Ayurved Sharira and Modern anatomy
- Having extensive knowledge and skill of dissecting human dead bodies and its demonstration.

## **M.D.- Ayurved Vachaspati in**

### **3. KRIYA SHARIR**

- Having profound knowledge of Ayurved Kriya Sharir: - - and Contribution of different Ayurveda Samhita in Kriya Sharir
- Ability to determine and demonstrate the Sharir – Manans Prakriti
- Should have knowledge of Modern Physiology and its applied aspects

## **M.D.- Ayurved Vachaspati in**

### **4. DRAVYAGUNA VIGYAN**

- Have a clear understanding of medicinal plants in context to Ayurved and modern Pharmacology and Pharmaceutics
- Have an accurate knowledge of identification, Authentication and standardization of raw and wet plant drugs.
- Ability of cultivation and plantation of medicinal plants
- Knowledge about Pharmacovigilance
- Ability to conduct the pre clinical and clinical trials of medicinal plants

## **M.D.- Ayurved Vachaspati in**

### **5. RASASHASTRA EVAM BHAISHJYA KALPNA**

- Have an accurate knowledge of identification, Authentication and standardization of minerals and metals along with plant drugs
- Possess detailed knowledge of manufacturing practices of various dosage forms of



Ayurved formulations as per GMP

- Ability to establish, run and manage pharmacy as per GMP and FDA guidelines
- Having knowledge of Drug and cosmetics related acts
- Ability to conduct the pre clinical and clinical trials on minerals and metals

**M.D.- Ayurved Vachaspati in**

### **6. AGADA TANTRA EVUM VIDHIVAIDYAKA**

- To be able to understand and interpret Ayurvedic and Contemporary Toxicology
- Having knowledge of Pharmacodynamics of different formulations used in Agadatantra and Clinical & Experimental toxicology
- Ability of Ayurvedic & Contemporary Management Of Poisoning
- Should have profound knowledge of Forensic Medicine and Medical Jurisprudence
- Ability to diagnose and manage substance abuse [ De- addiction]
- Have knowledge of Pharmacovigilance, community health problems due to poisons & pollution, Drug interactions & incompatibility etc.

**M.D.- Ayurved Vachaspati in**

### **7. SWASTHAVRITTA**

- Having knowledge of Concept of holistic health and Principles of dietetics according to Ayurveda
- Understanding the Concept of community health, prevention, Stages of intervention according to Ayurved Modern medicine
- Should have knowledge of Ayurved and Modern Concept of Epidemiology [Janapadodhwamsa]
- Possess knowledge of Therapeutic effect of Yogic practices and ability to demonstrate various yogasanas in various diseases
- Understanding the role of Ayurved for Immunization, Occupational Health, Geriatrics, Life Style disorders (Non Communicable diseases)

**M.D.- Ayurved Vachaspati in**

### **8. ROGA NIDANA**

- To understand the Concept and applied aspects of fundamental principles of Rognidan
- To have profound Knowledge of classical Samprapti of all diseases with interpretation of Nidana Panchaka including Upadrava, Arishta and Sadhyasadhyata and Chikitsa Sutra.
- Ability of Ayurvedic interpretation of commonly occurring diseases in contemporary medicine, all relevant findings of modern clinical examinations and various Laboratory and other Diagnostic reports

- Ability of establishment and management of standard clinical laboratory set up
- Have knowledge about Upasargajanya Vyadhi (Communicable diseases)

### **M.D.- Ayurved Vachaspati in**

#### **9. Panchakarma**

- To have thorough knowledge of Kayachikitsa, basic principles of Shodhana (BioPurification methods) and Raktamokshana, Physiotherapy & Disease-wise Panchakarma
- To be able to perform poorva, Pradhan & Pashchat karma of Panchakarma procedures [ five Purification therapies] of Ayurveda and manage its complications [ Updrava].
- To be able to prepare all the necessary bhaishjya kalpana for various panchakarma procedures

### **M.D.- Ayurved Vachaspati in**

#### **10. Kayachikitsa**

- To have thorough knowledge of Fundamentals of Kayachikitsa  
BVDUCOA\_ Programme outcomes Page 7
- To be able to perform Rogi-Roga Pariksha in Ayurved and Modern perspectives with the help of modern diagnostic parameters.
- To be able to perform samanya and vishesh roga chikitsa including application of advances in Rasayana and Vajikarana therapies and emerging trends in Panchakarma in various disease management
- To have knowledge of Critical care medicine, Management of medical emergencies, ICU services, Field medical services
- To be able to participate in National Health Programmes and recognize prospective role of Ayurveda services and therapeutics in them.

### **M.D.- Ayurved Vachaspati in**

#### **11. KAUMARBHRITYA-BALA ROGA**

- Ability to interpret Ayurvedic genetics with Pathogenesis of Modern genetics and management of genetic disorders
- To have thorough knowledge of Neonatal Care and management of all types of neonatal diseases
- To diagnose and manage the Paediatric Disorders
- Ability to develop and manage paediatric ward with Fundamentals of Hospital management

## **Eligibility**

Passing marks for eligibility in admission to ASU&H- PG courses should be as per the ASU&H- PG regulations and should be followed strictly., -

- A person possessing the degree of Ayurvedacharya (Bachelor of Ayurveda Medicine and Surgery) or provisional degree certificate recognized as per the provisions of IMCC 1970/NCISM 2020 act and possess permanent or provisional registration certificate issued by the CCIM/NCISM/state board and must have completed a satisfactorily one year compulsory rotating internship as per the NCISM notification.
- In order to be eligible for admission to post graduate courses it shall be necessary for a candidate to obtain minimum of marks at 50<sup>th</sup> percentile in the All India AYUSH Post Graduate Entrance Test ( AIAPGET) .
- Candidates belonging to the scheduled castes, Scheduled Tribes and other Backward Classes the minimum marks shall be at 40<sup>th</sup> percentile.

## **Medium of instruction**

The medium of instruction for the programme shall be Sanskrit or Hindi or English with use of Ayurvedic technical terms.

## **Duration of the Course Study**

**Total Duration of Course** – 3 Years from the Commencement of classes. The maximum duration for completion of the course shall not exceed beyond the period of six years from the date of admission to the course.

**Curriculum** - As approved by Bharati Vidyapeeth [Deemed to be University], Pune is in line with the directives of the Central Council for Indian Medicine.

## **Attendance and Progress**

The students shall have to attend a minimum of seventy-five per cent. of total lectures, practical's and clinical tutorials or classes to become eligible for appearing in the examination. A Web based centralized biometric attendance system shall be required for the attendance of post-graduate students and manual attendance at department level in which student is pursuing the post-graduate course.

The student shall have to attend the hospital and perform other duties as may be assigned to him during study. The student of clinical subject shall have to do resident duties in their respective departments and student of non-clinical subject shall have duties in their respective departments like Pharmacy or Herbal Garden or Laboratory during study. The student shall attend special lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

**Subjects taught, Number of lectures/ practical and demonstrations for various subjects [ MD/MS]**

❖ **Specialties in which post-graduate degree is allowed are as under: -**

Sr. No.	Name of speciality	Nearest terminology of modern subject	Department in which postgraduate degree can be conducted
<b>Pre-clinical speciality</b>			
1	Ayurveda Samhita evam Siddhant	Ayurveda Samhita and basic principles of Ayurveda	Samhita and basic principles of Ayurveda
2	Rachana Sharira	Anatomy	Rachana Sharira
3	Kriya Sharira	Physiology	Kriya Sharira
<b>Para-clinical speciality</b>			
4	Dravyaguna Vigyana	Materia Medica and Pharmacology	Dravyaguna
5	Rasa Shastra evam Bhaishajya Kalpana	Ayurveda Pharmaceuticals	Rasa Shastra evam Bhaishajya Kalpana
6	Roga Nidana evam Vikriti Vigyana	Diagnostic Procedure and Pathology	Roga Nidana evam Vikriti Vigyana
<b>Clinical speciality</b>			
7	Prasuti evam Stri Roga	Obstetrics and Gynecology	Prasuti evam Stri Roga
8	Kaumarabhritya –Bala Roga	Pediatrics	Kaumarabhritya– Bala Roga
9	Swasthavritta	Preventive Social Medicine	Swasthavritta and Yoga
10	Kayachikitsa	Medicine	Kayachikitsa
11	Shalya	Surgery	Shalya Tantra
12	Shalakya	Diseases of Eye, Ear, Nose, Throat Head, Neck, Oral and Dentistry	Shalakya Tantra
13	Panchakarma	Panchakarma	Panchakarma
14	Agada Tantra	Toxicology and Forensic Medicine	Agada Tantra.

❖ **Nomenclature of post-graduate degree. -**

The nomenclature of post-graduate degree in respective specialties shall be as under: -

Sl.No.	Nomenclature of specialty or degree	Abbreviation
<b>Pre-clinical specialty</b>		
1	Ayurveda Vachaspati – Ayurveda Samhita Evum Siddhant	M.D. (Ayurveda)- Compendium and Basic Principles
2	Ayurveda Vachaspati – Rachana Sharira	M.D. (Ayurveda) - Anatomy
3	Ayurveda Vachaspati – Kriya Sharira	M.D. (Ayurveda) - Physiology
<b>Para-clinical specialty</b>		
4	Ayurveda Vachaspati – Dravyaguna Vigyana	M.D. (Ayurveda) - Materia Medica and Pharmacology
5	Ayurveda Vachaspati – Rasa Shastra evam Bhaishajya Kalpana	M.D. (Ayurveda) - Pharmaceuticals
6	Ayurveda Vachaspati – Roga Nidana evam Vikriti Vigyana	M.D. (Ayurveda)- Diagnostic procedure and Pathology
<b>Clinical specialty</b>		
7	Ayurveda Dhanvantari – Prasuti evam Stri Roga	M.S. (Ayurveda)- Obstetrics and Gynecology
8	Ayurveda Vachaspati – Kaumarabhritya –Bala Roga	M.D. (Ayurveda)- Pediatrics
9	Ayurveda Vachaspati – Swasthavritta	M.D. (Ayurveda)- Social and Preventive Medicine
10	Ayurveda Vachaspati – Kayachikitsa	M.D. (Ayurveda)- Medicine
11	Ayurveda Dhanvantari – Shalya	M.S. (Ayurveda)- Surgery
12	Ayurveda Dhanvantari – Shalakyia	M.S. (Ayurveda)- Diseases of Eye, Ear, Nose, Throat Head, Neck, Oral and Dentistry
13	Ayurveda Vachaspati – Panchakarma	M.D. (Ayurveda)- Panchakarma
14	Ayurveda Vachaspati – Agada Tantra	M.D. (Ayurveda)- Toxicology and Forensic Medicine

## **Synopsis and Dissertation**

Central Scientific Advisory Post Graduate Committee appointed by Central Council of Indian Medicine shall suggest the areas of Research and topics and the same shall be followed by University Committee while approving the Dissertation title.

The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

If the student fails to submit the title of dissertation and synopsis within specified period, his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

- **Synopsis**

The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any).

The University shall approve the synopsis not later than three months after submission of the synopsis.

A Board of Research Studies shall be constituted by the University to approve the title.

The University shall display the approved synopsis of dissertation on their website.

- **Dissertation**

Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

The dissertation shall consist of not less than forty thousand words.

The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.



## **Scheme of Examination**

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

1. The preliminary examination -
2. The final examination –

**1.The preliminary examination** – Conducted at the end of one academic year after admission.

**The subjects/ Number of Papers** for preliminary examination namely: -

**Paper I-** Research Methodology and Bio or Medical Statistics;

**Paper II-** Applied aspects regarding concerned subjects.

### **Rules-**

The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the specialty opted by him as under:-

- (a) Study of literature related to specialty,
- (b) Regular clinical training in the hospital for student of clinical subject,
- (c) Practical training of research work carried out in the department, for student of pre-clinical and paraclinical subject,
- (d) Participation in various seminars, symposia and discussions; and (e) progress of the work done on the topic of dissertation.

The assessment of the work done by the students of first year post-graduate course during the first year will be done before the preliminary examination.

Examination shall ordinarily be held in the month of June or July and November or December every year. For being declared successful in the examination, student shall have to pass all the subjects separately in preliminary examination. The student shall be required to obtain a minimum of fifty per cent and marks in practical and theory subjects separately to be announced as a pass. If a student fails in the preliminary examination, he shall have to pass before appearing in the final examination.

**2. The final examination** -Conducted on completion of three academic years after the admission to postgraduate course.

The final examination shall include dissertation, written papers and clinical or practical and oral examination.

**Number of Papers** -There shall be four theory papers in each specialty and one practical or clinical and viva-voce examination in the concerned specialty or group of subspecialties selected by the student for special study.

The student shall publish or get accepted minimum one research paper on his research work in one journal and one paper presentation in regional level seminar.

The preliminary examination and final examination shall be held in written, practical, or clinical and oral examination. If the student fails in theory or practical in the final examination, he can appear in the subsequent examination without requiring submitting a fresh dissertation. The subsequent examination for failed candidates shall be conducted at every six-month interval; and the post-graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

**AYURVED DHANWANTARI M.S.-AYURVEDA**

**PRELIMINARY PAPER-I**  
**RESEARCH METHODOLOGY AND MEDICAL STATISTICS**

**PART-A**  
**RESEARCH METHODOLOGY**

- 1 Introduction to Research**
  - A. Definition of the term research
  - B. Definition of the term anusandhan
  - C. Need of research in the field of Ayurveda
  
- 2 General guidelines and steps in the research process**
  - A. Selection of the research problem
  - B. Literature review: different methods (including computer database) with their advantages and limitations
  - C. Defining research problem and formulation of hypothesis
  - D. Defining general and specific objectives
  - E. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
  - F. Sample design
  - G. Collection of the data
  - H. Analysis of data.
  - I. Generalization and interpretation, evaluation and assessment of hypothesis.
  - J. Ethical aspects related to human and animal experimentation.
  - K. 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.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
  
- 5 Classical Methods of Research. Tadvidya sambhasha, vadmarga and tantrayukti**  
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 tantrayukti

**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**

- a. Fundamental research on concepts of Ayurveda
- b. Panchamahabhuta and tridosha.
- c. Concepts of rasa, guna, virya, vipak, prabhav and karma
- d. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.

**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:

**Drug sources:** plant, animal and mineral. Methods of drug identification.

**Quality control and standardization aspects:** Basic knowledge of Pharmacopoeial standards and parameters set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices(GMP) and Good Laboratory Practices (GLP).

**10. Safety aspects:** Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.

**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.

**13.** Pharmacovigilance for ASU drugs. Need, scope and aims & objectives. National Pharmacovigilance Programme for ASU drugs.

**14.** Introduction to bioinformatics, scope of bioinformatics, role of computers in biology. Introduction to Database- 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**

**40 marks**

**MEDICAL STATISTICS**

**Teaching hours: 80**

**1 Definition of Statistics :** Concepts, relevance and general applications of Biostatistics in Ayurveda

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

**2 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

**3 Measures of Central tendency** – Mean, Median and Mode.

**4 Variability:** Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation

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

**6 Normal distribution:** Concept and Properties, Sampling distribution, Standard Error, Confidence Interval and its application in interpretation of results and normal probability curve.

**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

**9 Parametric tests:**

'Z' test, Student's 't' test: paired and unpaired, 'F' test, Analysis of variance (ANOVA) test, repeated measures analysis of variance

**10 Non parametric methods:**

Chi-square test, Fisher's exact test, McNemar's test, Wilcoxon test, Mann-Whitney U test, Kruskal – 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:**

Population and sample. Advantages of sampling, Random (Probability) and non random (Non- probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**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**

**100 marks**

**I. RESEARCH METHODOLOGY**

**Teaching hours 120**

**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)

**4 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

#### **5 Pharmacology and toxicology**

Familiarization and demonstration of techniques related to pharmacology and toxicology

#### **6 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.

#### **7 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.

#### **8 Imaging Sciences**

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

#### **9 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):**

1. Instrumental spotting test– 20 marks
2. Clinical protocol writing exercise on a given problem– 20 marks
3. Records:Research methodology -10 Mark
4. Medical statistics -10 marks
5. Viva- Voce -40 Marks

#### **REFERENCE BOOKS:-**

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**Pharmaceutical chemistry, quality control and drug standardization:**

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13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
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**Biochemistry and Laboratory techniques:**

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12. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

#### **Research methodology:**

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2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
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#### **Biotechnology and Bio-informatics:**

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#### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
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15. Suhas Kumar Shetty- Medical statistics made easy

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**PRELIMINARY**

**PAPER-II**

**MS(AYU) SHALAKYA TANTRA  
( DISEASES OF EYE, EAR, NOSE, THROAT, HEAD, ORO- DENTISTRY)**

**PRELIMINARY – PAPER II**

**THEORY – 100 MARKS (3 HOURS)**

**PRACTICAL AND VIVA VOCE – 100 MARKS**

Part A – 50 marks

1. History and chronological development of Shalaky Tantra.
2. Establishment and importance of ‘Shirasouttamangatwam’, ‘Nasa Hi shirsodwaram’, and ‘Sarvendriyanam Nayanam Pradhanam’.
3. Applied Anatomy and physiology of Netra, Karna, Nasa, Mukha with related marmas and disease classification as per Ayurvedic classics.
4. Knowledge of Agropaharaniya in Shalaky Tantra.
5. Fundamental knowledge of Sterilization and Anaesthesia in Shalaky Tantra.
6. Swasthviritta related to Shalaky Tantra.
7. Description of Yantra, Shastra and anushastra related to Shalaky Tantra.
8. Application of Panchakarma chikitsa in Urdhvajatrugata Vikaras.
9. Applied knowledge of various therapeutic procedures used in Netra rogas
10. Applied knowledge of various therapeutic procedures used in Karna-Nasa-Mukha Danta and Shirorogas, like Karnaprakshalana, Karna dhoopana, Karnapichu , Karnapoorana , Nasaprakshalan, Nasapichu, Kavala, Gandusha, Pratisarana, Dhoomapana, Shiroabhyanga, Shiropichu, Shirodhara, Shirobasti etc.
11. Knowledge of Vranabandhana (bandaging of wounds) in Shalaky Tantra.
12. Common classical yogas and single drug therapy in Shalaky Tantra.
13. Pathyapathya in Shalaky Tantra.

Part B – 50 marks

14. Critical analysis of nidana of Urdhwajatruvikaras.
15. Fundamentals of optics and refraction.
16. Clinical methods of eye examination and application of various aids and techniques with their respective interpretation viz. Retinoscopy, Refraction, Tonometry, Slit lamp examination, Pachymetry, Direct and Indirect Ophthalmoscopy, Gonioscopy, Perimetry, A scan, B scan, FFA (Fundus Fluorescein Angiography), OCT (Optical Coherence Tomography)etc.
17. Clinical methods of Ear examination with special reference to hearing and balance.
18. Fundamentals of Acoustics and Audiology.
19. Clinical methods of examination of Nose and Para nasal sinuses with various aids and techniques.
20. Clinical methods of Oro-Dental examination with various instruments and techniques.
21. Basic pharmacology of common drugs required in diagnostic and therapeutic procedures in Eye, ENT and Oro-Dentistry.

22. Eye donation and Eye banking.
23. Knowledge of handling of Bio-medical waste

**PRACTICAL AND VIVA VOCE – 100 MARKS**

- Pattern of practical/clinical training
1. Clinical postings in OPD, IPD, Kriyakalpa and OT.
  2. Clinical bed side case presentation
  3. Case record - 20 cases ( Eye, ENT, Shiras and Oro-dental 5 cases each).
  4. Hands on training in Ayurvedic treatment procedures in Netra, Karna-Nasa – Shira – Mukha-Danta Rogas.
  5. Participation in seminars, workshops, CMEs.

Distribution of marks (practical)- 100 marks

1. Case record - 20marks
2. Bed side examination
  - a. Long case - 20marks
  - b. Short case - 10marks
  - c. Procedure demonstration - 15marks
3. Identification of specimens, radiographs, - 15marks
4. Viva voce – - 20marks

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**MS(AYU) SHALAKYA TANTRA - FINAL  
( DISEASES OF EYE, EAR, NOSE, THROAT, HEAD, ORO- DENTISTRY)**

**THEORY - 400 MARKS  
PRACTICAL & VIVA - 100 MARKS**

**PAPER I- SHALAKYA - NETRA ROGA  
THEORY – 100 MARKS (3 HOURS)**

**Part A – 50 marks**

1. Nidanapanchaka and samanya chikitsa of netrarogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Sandhigata, Vartmagata and Pakshmagatarogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Shuklagata and Krishnagatarogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Drishtigata and Sarvagatarogas with their comparative knowledge of modern science.
5. Descriptive knowledge of Ashtavidhashastrakarma (eight types of surgical procedures) and Chaturvidhachikitsa (Bheshaja, Shastra, Kshara and Agni) and post operative care of the patient with respect to Netrarogas.
6. Diseases of eyelids and lacrimal apparatus and their Modern and Ayurvedic Management.
7. Disorders of conjunctiva, cornea and sclera and their Modern and Ayurvedic Management.

**PART B – 50 marks**

8. Disorders of uveal tract and lens and their Modern and Ayurvedic Management.
9. Disorders of vitreous, retina, optic nerve, visual pathway and visual cortex and their Modern and Ayurvedic Management.
10. Benign and malignant tumours of the eye and their Ayurvedic Management.
11. Study of Nayanabhighata with prevention and management.
12. Concept of congenital, developmental disorders of eye and prevention and management through Ayurveda and modern science.
13. Ocular motility disorders and their management as per Ayurvedic and modern science.
14. Neurological and systemic disorders affecting Eyes and their Modern and Ayurvedic Management.

**PAPER II THEORY – 100 MARKS (03 HOURS)**

**PART A – 50 MARKS**

1. Nidanapanchaka and samanya chikitsa of shiro-nasa-karna and kantharogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Shiro and kapalgatha rogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Nasarogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Karna rogas with their comparative knowledge of modern science.
5. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Kantharogas with their comparative knowledge of modern science.

**PART B – 50 marks**

6. Descriptive knowledge of Ashtavidhashastrakarma (eight types of surgical procedures) and Chaturvidha chikitsa (Bheshaja, Shasthra, kshara and Agni) and post-operative care of the patient with respect to ENT disorders.
7. Study of various types of Headache and their Modern and Ayurvedic Management.
8. Diseases of the Nose and paranasal sinuses and their Modern and Ayurvedic Management.
9. Diseases of the Ear and their Modern and Ayurvedic Management.
10. Diseases of the Throat and Larynx and their Modern and Ayurvedic Management.

**Paper III – SHALAKYA –MUKHA DANTA ROGA**

**THEORY - 100 marks**

**(Part A- 50 and Part B-50)**

**PART A**

1. Nidanapanchaka and samanyachikitsa of Mukha-Dantarogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Oshthagata rogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Dantamulagata rogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Danta rogas with their comparative knowledge of modern science.
5. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Jiwhagata rogas with their comparative knowledge of modern science.

6. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Talugata rogas with their comparative knowledge of modern science.

**PART B**

7. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Sarvasara mukha rogas with their comparative knowledge of modern science.

8. Jalandhar bandha and its importance and application in painless tooth extraction.

9. Diagnostic Methodology in oral and dental diseases.

10. Oro- Dental diseases with their Modern and Ayurvedic management.

11. Knowledge of essential modern drugs and anaesthetic agents for diagnosis and surgical procedures in oro-dentistry.

13. Updated knowledge of modern instruments of Oro-Dental Disorders.

**PAPER IV – SHALAKYA – SHALAKYA VISHISHTHA CHIKITSA VIGYAN  
THEORY - 100 MARKS**

**(PART A- 50 AND PART B-50)**

**PART A**

1. Detailed study of Netra kriyakalpas and vishishta aushadhikalpas with their standard operative procedures and their critical analysis.

2. Critical analysis of classical treatment procedures and vishishta aushadhikalpas with their standard operative procedures and their critical analysis in the context of Anya Urdhwajatrugata vikaras .

3. Role of Panchakarma chikitsa in Urdhwajatrugata vikaras.

4. Descriptive knowledge of common ocular surgical procedures like DCT, DCR, Pterygium, Entropion, Ectropion, Chalazion surgery, Cataract surgery, Evisceration, Enucleation, surgical procedures of glaucoma etc.

5. Descriptive knowledge of common ENT surgical procedures like Tympanoplasty, Mastoidectomy, Septoplasty, Septorhinoplasty, antral puncture, Turbinectomy, Polypectomy, Tonsillectomy etc.

6. Applied aspects of Imaging in ENT and head disorders

7. Speech therapy and rehabilitation of the deaf and mute.

8. Recent advances in the medical and surgical management of Eye, ENT and Oro Dental diseases.

9. Karna sandhana, Nasasandhana, Oshthasandhana with their recent advances.

10. Scope of researches in Shalakya Tantra in present era.

**PART B**

11. Ocular emergencies and their management.

12. Knowledge of preventive and community ophthalmology -WHO and National Programme for control of blindness and role of Ayurveda in these Programmes.

13. Knowledge of National Programme for deafness and tinnitus and role of Ayurveda in these Programmes.

14. Knowledge of National Programme for prevention of oral cancer and role of



Ayurveda in these Programmes. .

15. Effects of environmental hazards, and life style disorders of Eye, ENT and Oro dental disorders and their Modern and Ayurvedic preventive and therapeutic measures.
16. Management of emergencies in ENT, Head and Oro-Dental disorders.
17. Effects of systemic diseases on Eye, ENT, Head and Oro-dental diseases and their Modern and Ayurvedic management.
18. Removal of foreign bodies from Eye, ENT and Oro-Dental disorders.
19. Importance of Yogic kriyas, Yogasana and pranayama in Shalaky tantra.
20. Knowledge of rules, regulations and medico-legal aspects of Ophthalmic, ENT and Oro-dental practice

### **FINAL EXAM METHODS OF TRAINING**

- Intensive integrative training would be imparted to scholars in understanding the classical Ayurvedic aspects with an emphasis of critical comparative interpretation.
- Mandatory participation of scholars in seminars, group discussions, clinical demonstrations, journal review meetings, case study, continuing education activities and research clinical projects.
- During the first year course the emphasis would be laid to impart adequate knowledge on fundamental aspects and their applications, with a focus on latest diagnostic tools, instrumentations and laboratory procedures. Practical orientation and hospital based clinical training is an integral part of the curriculum all through and also to be involved in the dissertation work.
- In the second year, training would stress upon extending the knowledge on techniques and imparting skill for surgical performance, so that the scholar is able to perform Eye, Ear, Nose, Throat and Dental surgical procedures independently.
- In the third year the scholar should concentrate on the clinical work and research work based on the dissertation.
- The participation of the scholars in all the aspects of educational process is mandatory.
- Hospital postings- The student has to work for 6 terms (one term of 6 months each) of resident posting is compulsory to which first 2 postings will be as a JR 1, the next two postings will be as a JR 2 and final two postings as JR 3.
- The student should also develop in the academic work of the department.

### **Pattern of Practical Examination:**

1. Bed side examination  
Short case 2 of 10 marks each -20 Marks  
Long case -20 Marks
2. Identification of specimen/Instrument/Radiograph -10 Marks
3. Thesis Presentation / Viva -10 Marks
4. Teaching Skills -10Marks
5. Viva Voce -30 Marks

### Reference Books

1. Charaka Samhita with commentaries.
  2. Sushrut Samhita and vaghbhata with commentaries.
  3. Astangahridaya and Astangasangraha with commentaries.
  4. Madhavanidan with commentaries.
  5. Bhavaprakashawith commentaries.
  6. Sarangadhara Samhita with commentaries.
  7. Sahstrayoga Sangraha.
  8. Nimi Tantra.
  9. Relevent part of Chakradhatta, Bhel Samhita, Harita Samhita.
  10. Shalakya Tantra – Ramanath Dwivedi - R.C. Chaudhary.
- CCIM MS Ayurved –Shalakya Tantra Syllabus Page 3 of 3
11. The Actions and uses of Indigenous Ophthalmic Drugs N. Srikanth.
  12. Clinical Examination of Ophthalmic Cases - Agarwal and Gupta.
  13. Alder's Physiology of the Eye and Clinical Applications Cotlier, St. Louis.
  14. Disease of the Lens and Vitreous, Glaucoma and Hypotony Duke Elder, St. Louis.
  15. Manual of the Diseases of the Eye – Bailliere Tindal and Castell. Ahmed E, Dhanda, Dutta, L.C Jaypee brothers, May C and Worth C.
  16. Ocular Differential diagnosis.
  17. Clinical Ophthalmology – Roy Fedrick Hampton, Lea and Febiger Smith, R Varghese.
  18. Manual of Refraction - Duke and Elder.
  19. Hand Book of ophthalmology - B.M. Chaterjee.
  20. Clinical Ophthalmology - Kanski.
  21. Parsons Diseases of Eye.
  22. Stallard's Eye Surgery.
  23. Dental Anatomy Histology.
  24. Killey and Kay's Outline of Oral Surgery.
  25. Diseases of Nose Throat and Ear - Bhargav Shah.
  26. Diseases of Nose Throat and Ear, Head and Neck EBEdr.
  27. A Text book of Otorhinololaryngology-ScottBrowns edition.
  28. Text book of Ear Nose Throat diseases - Dhingra.
  29. Text book on ENT - Mohd. Maqbool.
  30. Logan Turner's book on ENT.
  31. Ballengers text book of ENT.
  32. Kumin's text book of ENT.
  33. Rob Smith's book of ENT surgery.
  34. Paprella's book of ENT.
  35. Hazarika's text book on ENT.
  36. Audiology Anirwan Biswas.

**Bharati Vidyapeeth  
Deemed to be University, Pune  
Faculty of Ayurved  
Programme- MS Ayurved Dhanvantari Shalakyatantra**

Addition in the syllabus of Shalakyatantra

1. Computer vision syndrome

2. Mucormycosis & its management



**BHARATI VIDYAPEETH  
(DEEMED TO BE UNIVERSITY), PUNE**

**FACULTY OF AYURVED  
MS - SHALAKYA TANTRA  
Old Syllabus**



**BHARATI VIDYAPEETH**  
**(DEEMED TO BE UNIVERSITY) PUNE, INDIA.**

**FACULTY OF AYURVED**

**Pune- Satara Road, Pune-411043.**

**Shalakyatantra**

*Accredited with 'A+' Grade (2017) by NAAC.*

*'A' Grade University status by MHRD, Govt. of India*

*Accredited (2004) & Reaccredited (2011) with 'A' Grade by NAAC.*

**Post- Graduate (M.D./M.S./Diploma in Ayurved)**

**Syllabus/ Curriculum**

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## **Preface**

Ayurveda is accepted worldwide as one of the oldest traditional systems of medicine. The ancient insight in this traditional system of medicine is still not profoundly discovered. Ayurveda signifies as "the life-science " where ayur means "life" and veda means "science" in Sanskrit. Ayurveda is the upaveda i.e. "auxiliary knowledge of Atharvaveda in Vedic tradition with its prime origin from Atharva-Veda and a supplement of the Rig-Veda. Lord Dhanvantari is worshipped as the God of Ayurveda. The goal of this traditional medicine system is to prevent illness, disease cure and preserve life. Being originated in India Ayurveda extends its wings in various parts of the world. In ancient days Ayurveda was taught in Gurukula system, which is now evolved in to post graduate courses from Institutions.

The Indian Medical Council was set up in 1971 by the Indian government to establish maintenance of standards for undergraduate and postgraduate education. It establishes suitable qualifications in Indian medicine and recognizes various forms of traditional practice including Ayurveda.

Ayurvedic practitioners also work in rural areas, providing health care to the million people in India alone. They therefore represent a major force for primary health care, and their training and placement are important to the government of India. Being a scientific medicine, Ayurveda has both preventive and curative aspects. The preventive component emphasizes the need for a strict code of personal and social hygiene, the details of which depend upon individual, climatic, and environmental needs.

The Bachelor of Ayurvedic Medicine and Surgery, MD/MS in various discipline of

Ayurveda started with the intention to encourage integrated teaching and de-emphasize compartmentalization of disciplines so as to achieve horizontal and vertical integration in different phases which helps to support National Health Services.

Looking into the health services provided to the public, understanding the need of practitioners of Ayurvedic system of medicine, as per the guidelines of apex body National Council of Indian system of Medicine (formerly CCIM) and suggestions provided by the faculty of various Specialties, stake holders and strategy of University this governance is framed

based on following aims and objectives -

### **Aims and objectives-**

The aims of the post-graduate degree courses shall be to provide orientation of specialties and super-specialties of Ayurveda, and to produce experts and specialists who can be competent and efficient teachers, physicians, surgeons, gynaecologists and obstetricians (Stri Roga and Prasuti Tantragraha), pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.



## **Faculty of Ayurved, Bharati Vidyapeeth (Deemed to be University), Pune**

### **Vision-**

To be a world class university for social transformation through dynamic education

### **Mission-**

- To ensure the good health and longevity of mankind.
- To carve a niche for our college in the world of Ayurved education
- To provide
  - Borderless access to Ayurved education
  - Quality Ayurved education
- To promote
  - Quality research in diverse areas of health care system.
  - Extensive use of ICT for teaching, learning and governance.
  - To develop national and international networks with industry and other academic and research institutions.

## **Program Outcomes For Post Graduate Courses in Ayurved-**

- PG degree holder should be expert and specialist of his/ her branch who can be competent and efficient teacher, physician, surgeon, gynaecologist and obstetrician (Stri Roga and Prasuti Tantragya), pharmaceutical expert, researcher and profound scholar in various fields of specialization of Ayurved.
- Should be having knowledge of Concept of Good clinical practices in Ayurved and modern medicine

### **Course specific outcomes**

#### **M. S – Ayurved Dhanvantari in**

##### **1. PRASUTI TANTRA & STREEROGA [OBSTETRICS AND GYNECOLOGY]**

- To be able to manage normal and complicated Pre-natal, Intra partum and Post natal cases by integrative approach
- To be able to manage all types of gynecological disorders at every epoch of womanhood.
- To be able to perform all kinds of Ayurvedic procedures and surgical procedures related to Stree roga and Prasutitantra
- To have knowledge of medico legal aspects of obstetrics and gynecology.

#### **M. S – Ayurved Dhanvantari in**

##### **2. SHALAKYA TANTRA [NETRA, SHIRO, NASA, KARNA, KANTHA, MUKHA]**

- To be able to manage all cases of E.N.T. and ophthalmology by integrative approach.
- To be able to perform all kinds of Ayurvedic procedures and surgical procedures related to Shalakyatantra
- To have knowledge of medico legal aspects of Shalakyatantra

#### **M. S – Ayurved Dhanvantari in**

##### **3. SHALYA TANTRA [GENERAL SURGERY]**

- To be able to manage all surgical cases by integrative approach
- To be able to perform all kinds of Ayurvedic procedures and general surgical procedures
- To have adequate knowledge of Anushashtra – Ksharkarma and prayoga, Agnikarma [thermo therapy], Raktamokshan [bloodletting ] or Asthisandhi evam marma vigyan [ orthopedic] or Sangyahan [Anesthesiology] or Mootraroga [ Urology]
- To have knowledge of medico legal aspects of Shalyatantra

## **M.D.- Ayurved Vachaspati in**

### **1. AYURVED SAMHITA & SIDDHANT**

- to have profound knowledge of Charak Samhita, Sushrut Samhita & AshtangHridayam, Ayurvediya and Darshanika Siddhanta with commentaries
- to be able to interpret philosophical principles incorporated in Charak Samhita, Sushrut Samhita, Ashtanga Hridaya, Ashtang Samgraha.
- To able to understand Practical applicability of principles of samhita and a competent Ayurved physician
- Competency in fundamental research

## **M.D.- Ayurved Vachaspati in**

### **2. RACHANA SHAARIRA**

- Should have thorough knowledge and competency in Ayurved Sharira and Modern anatomy
- Having extensive knowledge and skill of dissecting human dead bodies and its demonstration.

## **M.D.- Ayurved Vachaspati in**

### **3. KRIYA SHARIR**

- Having profound knowledge of Ayurved Kriya Sharir: - - and Contribution of different Ayurveda Samhita in Kriya Sharir
- Ability to determine and demonstrate the Sharir – Manans Prakriti
- Should have knowledge of Modern Physiology and its applied aspects

## **M.D.- Ayurved Vachaspati in**

### **4. DRAVYAGUNA VIGYAN**

- Have a clear understanding of medicinal plants in context to Ayurved and modern Pharmacology and Pharmaceutics
- Have an accurate knowledge of identification, Authentication and standardization of raw and wet plant drugs.
- Ability of cultivation and plantation of medicinal plants
- Knowledge about Pharmacovigilance
- Ability to conduct the pre clinical and clinical trials of medicinal plants

## **M.D.- Ayurved Vachaspati in**

### **5. RASASHASTRA EVAM BHAISHJYA KALPNA**

- Have an accurate knowledge of identification, Authentication and standardization of minerals and metals along with plant drugs
- Possess detailed knowledge of manufacturing practices of various dosage forms of

Ayurved formulations as per GMP

- Ability to establish, run and manage pharmacy as per GMP and FDA guidelines
- Having knowledge of Drug and cosmetics related acts
- Ability to conduct the pre clinical and clinical trials on minerals and metals

**M.D.- Ayurved Vachaspati in**

### **6. AGADA TANTRA EVUM VIDHIVAIDYAKA**

- To be able to understand and interpret Ayurvedic and Contemporary Toxicology
- Having knowledge of Pharmacodynamics of different formulations used in Agadatantra and Clinical & Experimental toxicology
- Ability of Ayurvedic & Contemporary Management Of Poisoning
- Should have profound knowledge of Forensic Medicine and Medical Jurisprudence
- Ability to diagnose and manage substance abuse [ De- addiction]
- Have knowledge of Pharmacovigilance, community health problems due to poisons & pollution, Drug interactions & incompatibility etc.

**M.D.- Ayurved Vachaspati in**

### **7. SWASTHAVRITTA**

- Having knowledge of Concept of holistic health and Principles of dietetics according to Ayurveda
- Understanding the Concept of community health, prevention, Stages of intervention according to Ayurved Modern medicine
- Should have knowledge of Ayurved and Modern Concept of Epidemiology [Janapadodhwamsa]
- Possess knowledge of Therapeutic effect of Yogic practices and ability to demonstrate various yogasanas in various diseases
- Understanding the role of Ayurved for Immunization, Occupational Health, Geriatrics, Life Style disorders (Non Communicable diseases)

**M.D.- Ayurved Vachaspati in**

### **8. ROGA NIDANA**

- To understand the Concept and applied aspects of fundamental principles of Rognidan
- To have profound Knowledge of classical Samprapti of all diseases with interpretation of Nidana Panchaka including Upadrava, Arishta and Sadhyasadhyata and Chikitsa Sutra.
- Ability of Ayurvedic interpretation of commonly occurring diseases in contemporary medicine, all relevant findings of modern clinical examinations and various Laboratory and other Diagnostic reports

- Ability of establishment and management of standard clinical laboratory set up
- Have knowledge about Upasargajanya Vyadhi (Communicable diseases)

### **M.D.- Ayurved Vachaspati in**

#### **9. Panchakarma**

- To have thorough knowledge of Kayachikitsa, basic principles of Shodhana (BioPurification methods) and Raktamokshana, Physiotherapy & Disease-wise Panchakarma
- To be able to perform poorva, Pradhan & Pashchat karma of Panchakarma procedures [ five Purification therapies] of Ayurveda and manage its complications [ Updrava].
- To be able to prepare all the necessary bhaishjya kalpana for various panchakarma procedures

### **M.D.- Ayurved Vachaspati in**

#### **10. Kayachikitsa**

- To have thorough knowledge of Fundamentals of Kayachikitsa  
BVDUCOA\_ Programme outcomes Page 7
- To be able to perform Rogi-Roga Pariksha in Ayurved and Modern perspectives with the help of modern diagnostic parameters.
- To be able to perform samanya and vishesh roga chikitsa including application of advances in Rasayana and Vajikarana therapies and emerging trends in Panchakarma in various disease management
- To have knowledge of Critical care medicine, Management of medical emergencies, ICU services, Field medical services
- To be able to participate in National Health Programmes and recognize prospective role of Ayurveda services and therapeutics in them.

### **M.D.- Ayurved Vachaspati in**

#### **11. KAUMARBHRITYA-BALA ROGA**

- Ability to interpret Ayurvedic genetics with Pathogenesis of Modern genetics and management of genetic disorders
- To have thorough knowledge of Neonatal Care and management of all types of neonatal diseases
- To diagnose and manage the Paediatric Disorders
- Ability to develop and manage paediatric ward with Fundamentals of Hospital management

## **Eligibility**

Passing marks for eligibility in admission to ASU&H- PG courses should be as per the ASU&H- PG regulations and should be followed strictly., -

- A person possessing the degree of Ayurvedacharya (Bachelor of Ayurveda Medicine and Surgery) or provisional degree certificate recognized as per the provisions of IMCC 1970/NCISM 2020 act and possess permanent or provisional registration certificate issued by the CCIM/NCISM/state board and must have completed a satisfactorily one year compulsory rotating internship as per the NCISM notification.
- In order to be eligible for admission to post graduate courses it shall be necessary for a candidate to obtain minimum of marks at 50<sup>th</sup> percentile in the All India AYUSH Post Graduate Entrance Test ( AIAPGET) .
- Candidates belonging to the scheduled castes, Scheduled Tribes and other Backward Classes the minimum marks shall be at 40<sup>th</sup> percentile.

## **Medium of instruction**

The medium of instruction for the programme shall be Sanskrit or Hindi or English with use of Ayurvedic technical terms.

## **Duration of the Course Study**

**Total Duration of Course** – 3 Years from the Commencement of classes. The maximum duration for completion of the course shall not exceed beyond the period of six years from the date of admission to the course.

**Curriculum** - As approved by Bharati Vidyapeeth [Deemed to be University], Pune is in line with the directives of the Central Council for Indian Medicine.

## **Attendance and Progress**

The students shall have to attend a minimum of seventy-five per cent. of total lectures, practical's and clinical tutorials or classes to become eligible for appearing in the examination. A Web based centralized biometric attendance system shall be required for the attendance of post-graduate students and manual attendance at department level in which student is pursuing the post-graduate course.

The student shall have to attend the hospital and perform other duties as may be assigned to him during study. The student of clinical subject shall have to do resident duties in their respective departments and student of non-clinical subject shall have duties in their respective departments like Pharmacy or Herbal Garden or Laboratory during study. The student shall attend special lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

**Subjects taught, Number of lectures/ practical and demonstrations for various subjects [ MD/MS]**

❖ **Specialties in which post-graduate degree is allowed are as under: -**

Sr. No.	Name of speciality	Nearest terminology of modern subject	Department in which postgraduate degree can be conducted
<b>Pre-clinical speciality</b>			
1	Ayurveda Samhita evam Siddhant	Ayurveda Samhita and basic principles of Ayurveda	Samhita and basic principles of Ayurveda
2	Rachana Sharira	Anatomy	Rachana Sharira
3	Kriya Sharira	Physiology	Kriya Sharira
<b>Para-clinical speciality</b>			
4	Dravyaguna Vigyana	Materia Medica and Pharmacology	Dravyaguna
5	Rasa Shastra evam Bhaishajya Kalpana	Ayurveda Pharmaceuticals	Rasa Shastra evam Bhaishajya Kalpana
6	Roga Nidana evam Vikriti Vigyana	Diagnostic Procedure and Pathology	Roga Nidana evam Vikriti Vigyana
<b>Clinical speciality</b>			
7	Prasuti evam Stri Roga	Obstetrics and Gynecology	Prasuti evam Stri Roga
8	Kaumarabhritya –Bala Roga	Pediatrics	Kaumarabhritya– Bala Roga
9	Swasthavritta	Preventive Social Medicine	Swasthavritta and Yoga
10	Kayachikitsa	Medicine	Kayachikitsa
11	Shalya	Surgery	Shalya Tantra
12	Shalakya	Diseases of Eye, Ear, Nose, Throat Head, Neck, Oral and Dentistry	Shalakya Tantra
13	Panchakarma	Panchakarma	Panchakarma
14	Agada Tantra	Toxicology and Forensic Medicine	Agada Tantra.



❖ **Nomenclature of post-graduate degree. -**

The nomenclature of post-graduate degree in respective specialties shall be as under: -

Sl.No.	Nomenclature of specialty or degree	Abbreviation
<b>Pre-clinical specialty</b>		
1	Ayurveda Vachaspati – Ayurveda Samhita Evum Siddhant	M.D. (Ayurveda)- Compendium and Basic Principles
2	Ayurveda Vachaspati – Rachana Sharira	M.D. (Ayurveda) - Anatomy
3	Ayurveda Vachaspati – Kriya Sharira	M.D. (Ayurveda) - Physiology
<b>Para-clinical specialty</b>		
4	Ayurveda Vachaspati – Dravyaguna Vigyana	M.D. (Ayurveda) - Materia Medica and Pharmacology
5	Ayurveda Vachaspati – Rasa Shastra evam Bhaishajya Kalpana	M.D. (Ayurveda) - Pharmaceuticals
6	Ayurveda Vachaspati – Roga Nidana evam Vikriti Vigyana	M.D. (Ayurveda)- Diagnostic procedure and Pathology
<b>Clinical specialty</b>		
7	Ayurveda Dhanvantari – Prasuti evam Stri Roga	M.S. (Ayurveda)- Obstetrics and Gynecology
8	Ayurveda Vachaspati – Kaumarabhritya –Bala Roga	M.D. (Ayurveda)- Pediatrics
9	Ayurveda Vachaspati – Swasthavritta	M.D. (Ayurveda)- Social and Preventive Medicine
10	Ayurveda Vachaspati – Kayachikitsa	M.D. (Ayurveda)- Medicine
11	Ayurveda Dhanvantari – Shalya	M.S. (Ayurveda)- Surgery
12	Ayurveda Dhanvantari – Shalakyia	M.S. (Ayurveda)- Diseases of Eye, Ear, Nose, Throat Head, Neck, Oral and Dentistry
13	Ayurveda Vachaspati – Panchakarma	M.D. (Ayurveda)- Panchakarma
14	Ayurveda Vachaspati – Agada Tantra	M.D. (Ayurveda)- Toxicology and Forensic Medicine

## **Synopsis and Dissertation**

Central Scientific Advisory Post Graduate Committee appointed by Central Council of Indian Medicine shall suggest the areas of Research and topics and the same shall be followed by University Committee while approving the Dissertation title.

The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

If the student fails to submit the title of dissertation and synopsis within specified period, his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

- **Synopsis**

The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any).

The University shall approve the synopsis not later than three months after submission of the synopsis.

A Board of Research Studies shall be constituted by the University to approve the title.

The University shall display the approved synopsis of dissertation on their website.

- **Dissertation**

Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

The dissertation shall consist of not less than forty thousand words.

The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

## **Scheme of Examination**

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

1. The preliminary examination -
2. The final examination –

**1.The preliminary examination** – Conducted at the end of one academic year after admission.

**The subjects/ Number of Papers** for preliminary examination namely: -

**Paper I-** Research Methodology and Bio or Medical Statistics;

**Paper II-** Applied aspects regarding concerned subjects.

### **Rules-**

The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the specialty opted by him as under:-

- (a) Study of literature related to specialty,
- (b) Regular clinical training in the hospital for student of clinical subject,
- (c) Practical training of research work carried out in the department, for student of pre-clinical and paraclinical subject,
- (d) Participation in various seminars, symposia and discussions; and (e) progress of the work done on the topic of dissertation.

The assessment of the work done by the students of first year post-graduate course during the first year will be done before the preliminary examination.

Examination shall ordinarily be held in the month of June or July and November or December every year. For being declared successful in the examination, student shall have to pass all the subjects separately in preliminary examination. The student shall be required to obtain a minimum of fifty per cent and marks in practical and theory subjects separately to be announced as a pass. If a student fails in the preliminary examination, he shall have to pass before appearing in the final examination.

**2.The final examination** -Conducted on completion of three academic years after the admission to postgraduate course.

The final examination shall include dissertation, written papers and clinical or practical and oral examination.

**Number of Papers** -There shall be four theory papers in each specialty and one practical or clinical and viva-voce examination in the concerned specialty or group of sub-specialties selected by the student for special study.

The student shall publish or get accepted minimum one research paper on his research work in one journal and one paper presentation in regional level seminar.

The preliminary examination and final examination shall be held in written, practical, or clinical and oral examination. If the student fails in theory or practical in the final examination, he can appear in the subsequent examination without requiring submitting a fresh dissertation. The subsequent examination for failed candidates shall be conducted at every six-month interval; and the post-graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

**AYURVED DHANWANTARI M.S.-AYURVEDA**

**PRELIMINARY PAPER-I**  
**RESEARCH METHODOLOGY AND MEDICAL STATISTICS**

**PART-A**  
**RESEARCH METHODOLOGY**

- 1 Introduction to Research**
  - A. Definition of the term research
  - B. Definition of the term anusandhan
  - C. Need of research in the field of Ayurveda
  
- 2 General guidelines and steps in the research process**
  - A. Selection of the research problem
  - B. Literature review: different methods (including computer database) with their advantages and limitations
  - C. Defining research problem and formulation of hypothesis
  - D. Defining general and specific objectives
  - E. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
  - F. Sample design
  - G. Collection of the data
  - H. Analysis of data.
  - I. Generalization and interpretation, evaluation and assessment of hypothesis.
  - J. Ethical aspects related to human and animal experimentation.
  - K. 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.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
  
- 5 Classical Methods of Research. Tadvidya sambhasha, vadmarga and tantrayukti**  
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 tantrayukti

**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**

- a. Fundamental research on concepts of Ayurveda
- b. Panchamahabhuta and tridosha.
- c. Concepts of rasa, guna, virya, vipak, prabhav and karma
- d. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.

**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:

**Drug sources:** plant, animal and mineral. Methods of drug identification.

**Quality control and standardization aspects:** Basic knowledge of Pharmacopoeial standards and parameters set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices(GMP) and Good Laboratory Practices (GLP).

**10. Safety aspects:** Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.

**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.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives. National Pharmacovigilance Programme for ASU drugs.

14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology. Introduction to Database- 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**

**40 marks**

**MEDICAL STATISTICS**

**Teaching hours: 80**

1 **Definition of Statistics :** Concepts, relevance and general applications of Biostatistics in Ayurveda

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

2 **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

3 **Measures of Central tendency** – Mean, Median and Mode.

4 **Variability:** Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation

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

6 **Normal distribution:** Concept and Properties, Sampling distribution, Standard Error, Confidence Interval and its application in interpretation of results and normal probability curve.

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

**9 Parametric tests:**

'Z' test, Student's 't' test: paired and unpaired, 'F' test, Analysis of variance (ANOVA) test, repeated measures analysis of variance

**10 Non parametric methods:**

Chi-square test, Fisher's exact test, McNemar's test, Wilcoxon test, Mann-Whitney U test, Kruskal – 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:**

Population and sample. Advantages of sampling, Random (Probability) and non random (Non- probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**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**

**100 marks**

**I. RESEARCH METHODOLOGY**

**Teaching hours 120**

**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)

**4 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

#### **5 Pharmacology and toxicology**

Familiarization and demonstration of techniques related to pharmacology and toxicology

#### **6 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.

#### **7 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.

#### **8 Imaging Sciences**

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

#### **9 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):**

1. Instrumental spotting test– 20 marks
2. Clinical protocol writing exercise on a given problem– 20 marks
3. Records:Research methodology -10 Mark
4. Medical statistics -10 marks
5. Viva- Voce -40 Marks

#### **REFERENCE BOOKS:-**

##### **Pharmacognosy:**

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**Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1 to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
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12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
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**Biochemistry and Laboratory techniques:**

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2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
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9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I. Churchill Livingstone (P) Ltd, New Delhi. 2000.
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#### **Research methodology:**

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#### **Drug research and development:**

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#### **Biotechnology and Bio-informatics:**

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9. William C. Scheffer Introduction to Clinical Researchs

#### **Medical Statistics:**

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15. Suhas Kumar Shetty- Medical statistics made easy

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**PRELIMINARY**

**PAPER-II**

**MS(AYU) SHALAKYA TANTRA  
( DISEASES OF EYE, EAR, NOSE, THROAT, HEAD, ORO- DENTISTRY)**

**PRELIMINARY – PAPER II**

**THEORY – 100 MARKS (3 HOURS)**

**PRACTICAL AND VIVA VOCE – 100 MARKS**

Part A – 50 marks

1. History and chronological development of Shalaky Tantra.
2. Establishment and importance of ‘Shirasouttamangatwam’, ‘Nasa Hi shirsodwaram’, and ‘Sarvendriyanam Nayanam Pradhanam’.
3. Applied Anatomy and physiology of Netra, Karna, Nasa, Mukha with related marmas and disease classification as per Ayurvedic classics.
4. Knowledge of Agropaharaniya in Shalaky Tantra.
5. Fundamental knowledge of Sterilization and Anaesthesia in Shalaky Tantra.
6. Swasthviritta related to Shalaky Tantra.
7. Description of Yantra, Shastra and anushastra related to Shalaky Tantra.
8. Application of Panchakarma chikitsa in Urdhvajatrugata Vikaras.
9. Applied knowledge of various therapeutic procedures used in Netra rogas
10. Applied knowledge of various therapeutic procedures used in Karna-Nasa-Mukha Danta and Shirorogas, like Karnaprakshalana, Karna dhoopana, Karnapichu , Karnapoorana , Nasaprakshalan, Nasapichu, Kavala, Gandusha, Pratisarana, Dhoomapana, Shiroabhyanga, Shiropichu, Shirodhara, Shirobasti etc.
11. Knowledge of Vranabandhana (bandaging of wounds) in Shalaky Tantra.
12. Common classical yogas and single drug therapy in Shalaky Tantra.
13. Pathyapathya in Shalaky Tantra.

Part B – 50 marks

14. Critical analysis of nidana of Urdhwajatruvikaras.
15. Fundamentals of optics and refraction.
16. Clinical methods of eye examination and application of various aids and techniques with their respective interpretation viz. Retinoscopy, Refraction, Tonometry, Slit lamp examination, Pachymetry, Direct and Indirect Ophthalmoscopy, Gonioscopy, Perimetry, A scan, B scan, FFA (Fundus Fluorescein Angiography), OCT (Optical Coherence Tomography)etc.
17. Clinical methods of Ear examination with special reference to hearing and balance.
18. Fundamentals of Acoustics and Audiology.
19. Clinical methods of examination of Nose and Para nasal sinuses with various aids and techniques.
20. Clinical methods of Oro-Dental examination with various instruments and techniques.
21. Basic pharmacology of common drugs required in diagnostic and therapeutic procedures in Eye, ENT and Oro-Dentistry.

22. Eye donation and Eye banking.
23. Knowledge of handling of Bio-medical waste

**PRACTICAL AND VIVA VOCE – 100 MARKS**

- Pattern of practical/clinical training
1. Clinical postings in OPD, IPD, Kriyakalpa and OT.
  2. Clinical bed side case presentation
  3. Case record - 20 cases ( Eye, ENT, Shiras and Oro-dental 5 cases each).
  4. Hands on training in Ayurvedic treatment procedures in Netra, Karna-Nasa – Shira – Mukha-Danta Rogas.
  5. Participation in seminars, workshops, CMEs.

Distribution of marks (practical)- 100 marks

1. Case record - 20marks
2. Bed side examination
  - a. Long case - 20marks
  - b. Short case - 10marks
  - c. Procedure demonstration - 15marks
3. Identification of specimens, radiographs, - 15marks
4. Viva voce – - 20marks

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**MS(AYU) SHALAKYA TANTRA - FINAL  
( DISEASES OF EYE, EAR, NOSE, THROAT, HEAD, ORO- DENTISTRY)**

**THEORY - 400 MARKS  
PRACTICAL & VIVA - 100 MARKS**

**PAPER I- SHALAKYA - NETRA ROGA  
THEORY – 100 MARKS (3 HOURS)**

**Part A – 50 marks**

1. Nidanapanchaka and samanya chikitsa of netrarogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Sandhigata, Vartmagata and Pakshmagatarogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Shuklagata and Krishnagatarogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Drishtigata and Sarvagatarogas with their comparative knowledge of modern science.
5. Descriptive knowledge of Ashtavidhashastrakarma (eight types of surgical procedures) and Chaturvidhachikitsa (Bheshaja, Shastra, Kshara and Agni) and post operative care of the patient with respect to Netrarogas.
6. Diseases of eyelids and lacrimal apparatus and their Modern and Ayurvedic Management.
7. Disorders of conjunctiva, cornea and sclera and their Modern and Ayurvedic Management.

**PART B – 50 marks**

8. Disorders of uveal tract and lens and their Modern and Ayurvedic Management.
9. Disorders of vitreous, retina, optic nerve, visual pathway and visual cortex and their Modern and Ayurvedic Management.
10. Benign and malignant tumours of the eye and their Ayurvedic Management.
11. Study of Nayanabhighata with prevention and management.
12. Concept of congenital, developmental disorders of eye and prevention and management through Ayurveda and modern science.
13. Ocular motility disorders and their management as per Ayurvedic and modern science.
14. Neurological and systemic disorders affecting Eyes and their Modern and Ayurvedic Management.

**PAPER II THEORY – 100 MARKS (03 HOURS)**

**PART A – 50 MARKS**

1. Nidanapanchaka and samanya chikitsa of shiro-nasa-karna and kantharogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Shiro and kapalgatha rogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Nasarogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Karna rogas with their comparative knowledge of modern science.
5. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Kantharogas with their comparative knowledge of modern science.

**PART B – 50 marks**

6. Descriptive knowledge of Ashtavidhashastrakarma (eight types of surgical procedures) and Chaturvidha chikitsa (Bheshaja, Shasthra, kshara and Agni) and post-operative care of the patient with respect to ENT disorders.
7. Study of various types of Headache and their Modern and Ayurvedic Management.
8. Diseases of the Nose and paranasal sinuses and their Modern and Ayurvedic Management.
9. Diseases of the Ear and their Modern and Ayurvedic Management.
10. Diseases of the Throat and Larynx and their Modern and Ayurvedic Management.

**Paper III – SHALAKYA –MUKHA DANTA ROGA**

**THEORY - 100 marks**

**(Part A- 50 and Part B-50)**

**PART A**

1. Nidanapanchaka and samanyachikitsa of Mukha-Dantarogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Oshthagata rogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Dantamulagata rogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Danta rogas with their comparative knowledge of modern science.
5. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Jiwhagata rogas with their comparative knowledge of modern science.

6. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Talugata rogas with their comparative knowledge of modern science.

**PART B**

7. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Sarvasara mukha rogas with their comparative knowledge of modern science.

8. Jalandhar bandha and its importance and application in painless tooth extraction.

9. Diagnostic Methodology in oral and dental diseases.

10. Oro- Dental diseases with their Modern and Ayurvedic management.

11. Knowledge of essential modern drugs and anaesthetic agents for diagnosis and surgical procedures in oro-dentistry.

13. Updated knowledge of modern instruments of Oro-Dental Disorders.

**PAPER IV – SHALAKYA – SHALAKYA VISHISHTHA CHIKITSA VIGYAN  
THEORY - 100 MARKS**

**(PART A- 50 AND PART B-50)**

**PART A**

1. Detailed study of Netra kriyakalpas and vishishta aushadhikalpas with their standard operative procedures and their critical analysis.

2. Critical analysis of classical treatment procedures and vishishta aushadhikalpas with their standard operative procedures and their critical analysis in the context of Anya Urdhwajatrugata vikaras .

3. Role of Panchakarma chikitsa in Urdhwajatrugata vikaras.

4. Descriptive knowledge of common ocular surgical procedures like DCT, DCR, Pterygium, Entropion, Ectropion, Chalazion surgery, Cataract surgery, Evisceration, Enucleation, surgical procedures of glaucoma etc.

5. Descriptive knowledge of common ENT surgical procedures like Tympanoplasty, Mastoidectomy, Septoplasty, Septorhinoplasty, antral puncture, Turbinectomy, Polypectomy, Tonsillectomy etc.

6. Applied aspects of Imaging in ENT and head disorders

7. Speech therapy and rehabilitation of the deaf and mute.

8. Recent advances in the medical and surgical management of Eye, ENT and Oro Dental diseases.

9. Karna sandhana, Nasasandhana, Oshtasandhana with their recent advances.

10. Scope of researches in Shalakya Tantra in present era.

**PART B**

11. Ocular emergencies and their management.

12. Knowledge of preventive and community ophthalmology -WHO and National Programme for control of blindness and role of Ayurveda in these Programmes.

13. Knowledge of National Programme for deafness and tinnitus and role of Ayurveda in these Programmes.

14. Knowledge of National Programme for prevention of oral cancer and role of

Ayurveda in these Programmes. .

15. Effects of environmental hazards, and life style disorders of Eye, ENT and Oro dental disorders and their Modern and Ayurvedic preventive and therapeutic measures.

16. Management of emergencies in ENT, Head and Oro-Dental disorders.

17. Effects of systemic diseases on Eye, ENT, Head and Oro-dental diseases and their Modern and Ayurvedic management.

18. Removal of foreign bodies from Eye, ENT and Oro-Dental disorders.

19. Importance of Yogic kriyas, Yogasana and pranayama in Shalaky tantra.

20. Knowledge of rules, regulations and medico-legal aspects of Ophthalmic, ENT and Oro-dental practice

### **FINAL EXAM METHODS OF TRAINING**

Intensive integrative training would be imparted to scholars in understanding the classical Ayurvedic aspects with an emphasis of critical comparative interpretation.

Mandatory participation of scholars in seminars, group discussions, clinical demonstrations, journal review meetings, case study, continuing education activities and research clinical projects.

During the first year course the emphasis would be laid to impart adequate knowledge on fundamental aspects and their applications, with a focus on latest diagnostic tools, instrumentations and laboratory procedures. Practical orientation and hospital based clinical training is an integral part of the curriculum all through and also to be involved in the dissertation work.

In the second year, training would stress upon extending the knowledge on techniques and imparting skill for surgical performance, so that the scholar is able to perform Eye, Ear, Nose, Throat and Dental surgical procedures independently.

In the third year the scholar should concentrate on the clinical work and research work based on the dissertation.

The participation of the scholars in all the aspects of educational process is mandatory.

Hospital postings- The student has to work for 6 terms (one term of 6 months each) of resident posting is compulsory to which first 2 postings will be as a JR 1, the next two postings will be as a JR 2 and final two postings as JR 3.

The student should also develop in the academic work of the department.

### **Pattern of Practical Examination:**

1. Bed side examination

Short case 2 of 10 marks each -20 Marks

Long case -20 Marks

2. Identification of specimen/Instrument/Radiograph -10 Marks

3. Thesis Presentation / Viva -10 Marks

4. Teaching Skills -10Marks

5. Viva Voce -30 Marks

### Reference Books

1. Charaka Samhita with commentaries.
  2. Sushrut Samhita and vaghbhata with commentaries.
  3. Astangahridaya and Astangasangraha with commentaries.
  4. Madhavanidan with commentaries.
  5. Bhavaprakashawith commentaries.
  6. Sarangadhara Samhita with commentaries.
  7. Sahstrayoga Sangraha.
  8. Nimi Tantra.
  9. Relevent part of Chakradhatta, Bhel Samhita, Harita Samhita.
  10. Shalakya Tantra – Ramanath Dwivedi - R.C. Chaudhary.
- CCIM MS Ayurved –Shalakya Tantra Syllabus Page 3 of 3
11. The Actions and uses of Indigenous Ophthalmic Drugs N. Srikanth.
  12. Clinical Examination of Ophthalmic Cases - Agarwal and Gupta.
  13. Alder's Physiology of the Eye and Clinical Applications Cotlier, St. Louis.
  14. Disease of the Lens and Vitreous, Glaucoma and Hypotony Duke Elder, St. Louis.
  15. Manual of the Diseases of the Eye – Bailliere Tindal and Castell. Ahmed E, Dhanda, Dutta, L.C Jaypee brothers, May C and Worth C.
  16. Ocular Differential diagnosis.
  17. Clinical Ophthalmology – Roy Fedrick Hampton, Lea and Febiger Smith, R Varghese.
  18. Manual of Refraction - Duke and Elder.
  19. Hand Book of ophthalmology - B.M. Chaterjee.
  20. Clinical Ophthalmology - Kanski.
  21. Parsons Diseases of Eye.
  22. Stallard's Eye Surgery.
  23. Dental Anatomy Histology.
  24. Killey and Kay's Outline of Oral Surgery.
  25. Diseases of Nose Throat and Ear - Bhargav Shah.
  26. Diseases of Nose Throat and Ear, Head and Neck EBEdr.
  27. A Text book of Otorhinololaryngology-ScottBrowns edition.
  28. Text book of Ear Nose Throat diseases - Dhingra.
  29. Text book on ENT - Mohd. Maqbool.
  30. Logan Turner's book on ENT.
  31. Ballengers text book of ENT.
  32. Kumin's text book of ENT.
  33. Rob Smith's book of ENT surgery.
  34. Paprella's book of ENT.
  35. Hazarika's text book on ENT.
  36. Audiology Anirwan Biswas.