

AGADTANTRA& VYAVAHAR AYURVED

Module for 6 Day Re-Orientation Training Program for Teachers

Unit 1 Topic: Introduction to Agad Tantra and Toxicology

Categories: Microteaching session

Course Contents:

i. Interactive session

1 hour

- Derivation, definition of Agad Tantra, Visha and Poison
- Sequential development of Agad Tantra
- Vishaguna, Karma and Parikshan (Ayurvedic and Contemporary methods)
- Vishavega and Vegantara and their importance in treatment of poisoning, VishaKriya(as per Ayurvedic and modern medicine)
- Toxicokinetic and toxicodynamic of Xenobiotics
- Action of Poison and Factors modifying the action of poison

ii. Activity Session(Group Discussion/Practical)

½ hour

- Participants are divided in group and assigned a topic with key words for critical appraisal of basic concepts. E.g.Visha kriya and pranahara kriya and its contemporary part, Significance of understanding of Vega and vegantara in clinical practice which will be redefined by the resource person
- Material for activity: A sheet with listed possible keywords specific to topics. The participants will make a network diagram as 'study design' pertaining to their identified topics.

Unit 2 Topic: Dushivisha, Garavisha and Viruddhahara

Category: Microteaching session

Course Contents:

i. Interactive session

1 hour

Basic

- Concept of Dushivishaw.s. r. to cumulative toxicity of heavy metals, pesticides etc., Garavisha(Artificial Poison), their clinical features, Management with contemporary relevance.
- Modern co-relation of Dushivisha&Garvisha with the conditions like oxidative stress, endocrine disruptors, allergy, autoimmune disorder, cumulative toxicity, organ target toxicity etc.
- Bioaccumulation of Heavy metals.
- Probable Mode of action of different agadas (Dushivishariagad, Bilwadigutika, murvadi yoga, sidharthakagada, champkadi agada, dashang agada, padminikantak agada, Kshara agada etc).
- Concept of Food Poisoning, Virudhahara (Ayurvedic and Contemporary view)
- Tests to Identify different food adulterants, additives, preservatives and substitutes.

Advance

- Concept of Vishashodhana and its physico-chemical analysis w.s.r to analytical methods TLC, HPTLC, GCMS etc.

ii. Activity Session(Group Discussion& Practical)

½ hour

- Practical demonstration for identification of adulterants, additives, preservatives and substitutes.
- Group discussion on related topics e.g., Significance of Dushi and Garavisha in 21st century i.e. in the world of chemicals, Interpretation of Virudhhaharin respect of autoimmune disease and food

incompatibility, Introduction to Virudhaahara and its contemporary view like- food allergy, food intolerance, incompatibility, food poisoning etc.

- Diagnosis of vishayukta anna-pana
- Material for activity: A sheet with listed possible keywords specific to topics. The participants will make a network diagram as 'study design' pertaining to their identified topics.

Unit 3 Topic: Drug induced toxicity, Environmental toxicity, Occupational toxicity, Janpadodhwansa

Category: Microteaching session

Course Contents:

i. Interactive session

1 hour

Basic

- Drug interaction, drug induced toxicity
- Introduction of Drug-drug, drug-herb, drug-food and herb-herb reactions with examples.
- Samarik Vishaprayoga,
- Environmental Toxicology in terms of air, water, land pollution.
- Occupational toxicity
- Toxicogenomic

Advance

- Concept of drug induced various organ toxicity.
- Prevention and management of adverse reactions to Ayurvedic medicines.
- Delayed response to environmental toxins in terms of air, water, land and occupational poison.
- Janpadodhwans due to epidemic and pandemics due to toxic chemicals and bio-medical weapons.

ii. Activity Session (Group Discussion & Practical)

½ hour

- Clinical case discussion of drug interaction.
- Interaction based on different research area regarding environmental pollution and Ayurvedic formulation explained in samrika vishaprayog.
- Group discussion on related topics e.g., various pandemics due to virus including COVID-19 and role of Agadtantra in such conditions.
- Group discussion on War gases and other biological weapon
- Material for activity: A sheet with listed possible keywords specific to topics. The participants will make a network diagram as 'study design' pertaining to their identified topics.

Unit 4 Topic: Clinical & Experimental Toxicology

Category: Microteaching session

Course Contents:

i. Interactive session

1hour

Basic

- Charkokta 24 chikitsaupkarma.
- Introduction to Clinical toxicology.
- Medical and legal duties of Medical Practitioner in poisoned patients (General Principles of poisoning management, treatment modalities as per modern science).
- Introduction to Experimental toxicology- estimation of LD50, Acute, Sub acute and chronic toxicity, cumulative toxicity etc.

- Diagnosis of poisoning(Ayurvedic or classic & contemporary criteria) along with laboratory investigations.
- Emergency management according to Ayurveda and modern science. (practical demonstration of Basic life support measures like CPR, Stomach Wash, Immediate life support measures like maintenance of ABCDE etc ,Ayurvedic and modern antidotesetc).

Advance

- Genotoxicity, Teratogenicity.
- Experimental Toxicology (Pre clinical studies – Animal Experiment, OECD guidelines and others).
- Role of Panchakarma and other procedures in emergency management of poisoning.

Activity Session(Group discussion and Practical)

½ hour

- Case study discussion of any acute or chronic poisoning management.
- Discussion on different research area related to experimental toxicology in agad tantra.
- Demonstration of Panchkarma procedures especially sadyovaman, raktmokshan, nasya etc.
- Workshop on CPR and BLS, stomach wash and other immediate life support measures.
- Interaction with the practitioners and their clinical experience.

Unit 5 Topic: AkritimVisha -SthavarVisha

Category: Microteaching session

Course Contents:

Basic

Interactive session

1hour

- How to read the Samhitas in the perspective of Agadatantra (to find the Visha and Visha Chikitsa references in chapters other than Visha).
- Treatment, medico-legal aspects, pharmacokinetic and pharmacodynamic, toxic symptoms of different poisons of plant origin like Vatsanabha, datura, Kupeelu, Opium, Bhang etc.
- Treatment, medicolegal aspects, pharmacokinetic and pharmacodynamic, toxic symptoms of different poisons of metal origin mercury, Arsenic, Copper, Lead
- Treatment, medicolegal aspects, pharmacokinetic and pharmacodynamic, toxic symptoms of different poisons of non-metal origin Phosphorus, Iodine etc.

Advance

- Methods explanation use in sodhana of visha and their analytical procedure
- Methods explanation use in Sodhana & marana of metal poison
- Explanation of modern techniques use in shodhana and marana.

Activity Session (Group Discussion/practical)

½ hour

- Case study discussion of any acute or chronic poisoning management of AkritimVisha.
- Identification of various sthavar visha of plant origin
- Identification of various sthavar visha of metal origin
- Identification of various sthavar visha of non-metal origin
- Practical demonstration of sodhana of plant poison
- Practical demonstration of sodhana and maran of metal poison
- Interaction on different analytical method like TLC, HPTLC, AAS,GC,GC-MS etc.

Unit 6 Topic: AkritrimVisha -JangamVisha

Category: Microteaching session

Course Contents:

i. Interactive session

1hour

- Ayurvedic and contemporary view of Sarpadansha.
- Ayurvedic and contemporary view of Alarka vishaandVrishchika dansha.
- Ayurvedic and contemporary view of Keeta dansha and mushaka dansha.
- Ayurvedic and contemporary view of Luta visha.

Activity Session (Group Discussion/practical)

½ hour

- Case study discussion of any acute poisoning management related to Sarpadansha..
- Case study discussion of any acute and chronic poisoning management related to Alarka Visha and Vrishchik dansha.
- Case study discussion of any acute and chronic poisoning management related to Keeta dansha and Mushak dansha.
- Case study discussion of any acute and chronic poisoning management related to Luta Visha.

Unit 7 Topic: Use of various Agadas in Treatment of Poisoning

Category: Microteaching session

Course Contents:

i. Interactive session

Basic

- Standardisation of Herbal Formulation- Toxicological Evaluation.
- Medicinal plants used in poisoning treatment.
- Vagbhatoktagana, vishaghana mahakshaya, eksaraghana used in poisoning treatment.
- Preparation and use of various agad used in poisoning treatment.
- Introduction toASV, ARV etc.

Advance

- Method of preparation of various Agada yogas necessary for the practice and their utilities in clinics for the clinical conditions other than toxicological cases.

ii. Activity Session (Group Discussion/practical)

½ hour

- Discussion of various medicinal plants used in poisoning treatment
- Case studybaseddiscussiononuse of Vagbhatoktagana, vishaghana mahakshaya, eksaraghana in acute or chronic poisoning management
- Case study based discussion on use of various Agadas in acute or chronic poisoning management
- Discussion on method of Preparation and mechanism of action of ASV, ARV.

Unit 8: Madya visha& Addiction

Category: Microteaching session

Course Contents:

- i. Interactive session** **1 hour**
- Oja and madyaguna comparison with modern co-relation.
 - Madya and madatyaand their stages.
 - Addiction (Drug abuse, Opium, Cannabis, coca, etc.)
 - De-addiction in Ayurveda.
- ii. Activity Session(Group discussion/Practical)** **½ hour**
- De-addiction OPD & IPD visit
 - Discussion on addiction Treatment protocol.
 - Demonstration of alcohol percentage in different beverages.
 - Interaction with counsellor for the role of counselling in de addiction.

Unit 9: Ancient and Folklore chikitsa and Keraliya visha chikitsa

Category: Microteaching session

Course Contents

- i. Interactive session** **1hour**
- Introduction to various Folklore Visha chikitsa practiced in world.
 - Introduction to various Folklore Visha chikitsa practiced in India.
 - Introduction to traditional keraliyaVisha chikitsa practiced in India.
 - Introduction to vishajyotsanika, pryogsamucchaya, vishvaidyasarasammuchhyaTexual books.
 - Interaction with the traditional vishavaidyas.
- ii. Activity session (Group discussion/ practical)** **½ hour**
- Preparation of agadas used in Folklore and Keraliyavishachikitsa.
 - Method of preparation of various Agada yogas necessary for the practice and their utilities in clinics for the clinical conditions other than toxicological cases.
 - Discussion on Personal experience regarding use of agad in clinical practice

Unit 10 Topic: Introduction of Vyavahar Ayurveda and Forensic medicine, legal procedure

Category: Microteaching session

Course Contents:

- i. Interactive session** **1hour**
- Definition of Vyavahara Ayurveda, its evolution in ancient and contemporary periods.
 - Important sections of Indian Penal Code, Criminal procedure code
 - Indian Evidence Act
 - Court and types
 - Legal procedure for recording of evidence
 - Doctor in witness box
- ii. Activity session (Group discussion / Practical)** **½ hour**
- Participants are to create a scene of court procedure and act in the play.
 - Discussion on landmark judgments passed by court on above mentioned topic

Unit 11 Topic: Thanatology, Autopsy

Category: Microteaching session

Course Contents:

i. Interactive session **1hour**

- Death and its medico-legal aspects (Medical Thanatology)
- Modes, Manner, Causes of death, signs of death and Suspended Animation.
- Algor, Livor, Rigor mortis, Decomposition.
- Medico-legal autopsy, Embalming in Ayurveda and modern.

ii. Activity session (Group discussion/Practical) **½ hour**

- Diagnosis of death and issuing Death certificate.
- Demonstration of autopsy kit.
- Writing of postmortem report.

Unit 12 Topic: Injury

Category: Microteaching session

Course Contents:

i. Interactive session **1hour**

- Death due to mechanical injuries, heat and cold, lightening and electrical injury.
- Injuries due to chemical and nuclear warfare.
- Medico-legal aspects of injuries and wounds, IPC Section 44, legal implications of section 320 IPC with maintenance of injury report.
- Injuries in road, railway, aircraft accidents.
- Medical jurisprudence aspect in offering treatment to injured person.
- Identification of specimens models and equipment related to injury.

ii. Activity session (Group discussion/Practical) **½ hour**

- Writing of injury report
- Writing of weapon report

Unit 13 Topic: Forensic Ballistics

Category: Microteaching session

Course Contents:

i. Interactive session **1hour**

- Classification of firearm weapons.
- Injuries due to explosion.
- Various components of the cartridge in rifled firearms.
- Fire Arm at different ranges.
- Shotgun injuries at varying ranges with their characteristics.
- Differentiation between wound of entry with wound of exit of firearm.

ii. Activity session (Group discussion/Practical) **½ hour**

- Demonstration of ballistics weapons.
- Discussion regarding the cases regarding ballistics and their findings.

Unit 14 Topic: Personal identification

Category: Microteaching session

Course Contents:

i. Interactive session

1hour

- Use of Forensic osteology and Odontology for age and sex determination
- Anthropometry
- Use of various prints in identification like- finger, foot, palate, lips, ear etc.
- Forensic Trichology
- DNA sampling
- Medico-legal evidences like Blood, semen, saliva analysis, Introduction to FSL

ii. Activity session - (Group discussion/Practical)

½ hour

- Age estimation activity on the basis of bone and x-ray plate.
- Sex determination on the basis of Bone.
- Demonstration of anthropometry instruments.
- Demonstration of crime scene reconstruction and how to collect blood and suspicious things.

Unit 15 Topic: Violent Asphyxia

Category: Microteaching session

Course Contents:

i. Interactive session

1hour

- Gordon's classification of death.
- Hanging, Strangulation types and other modes of Asphyxial death, causes of death and medico-legal importance.
- Drowning types, causes and medico-legal importance.

ii. Activity session (Group discussion/Practical)

½ hour

- Discussion on the anti-mortem and post-mortem differentiation of hanging, strangulation and other modes of Asphyxial death.
- Discussion on the anti-mortem and post-mortem differentiation of drowning.
- Discussion on judicial hanging.

Unit 16 Topic: Virginity, Impotence and sterility

Category: Microteaching session

Course Contents:

i. Interactive session

1hour

- Introduction to virginity, Impotence and sterility-medico legal aspects and related acts.
- Artificial Insemination and Regulations.
- Medico –legal aspects of surrogate motherhood.

ii. Activity session (Group discussion/Practical)

½ hour

- Case discussion and landmark judgements (If any).

Unit 17 Topic: Pregnancy Delivery Abortion, Infanticide

Category: Microteaching session

Course Contents:

i. Interactive session

1 hour

- Diagnosis of Pregnancy, Delivery Abortion, Infanticide.
- Medico-legal aspects of pregnancy, delivery, abortion, infanticide with related acts.

ii. Activity session (Group discussion/Practical)

½ hour

- Case discussion and landmark judgements (If any).

Unit 18 Topic: Sexual offence, Sexual perversions

Category: Microteaching session

Course Contents:

i. Interactive session

1 hour

- Introduction to Sexual offences and perversions.
- Medico-legal aspects of Sexual offences and perversions with related acts.
- Definition of Rape, procedure for the examination of an accused of rape & Victim of rape
- Enumeration of types of unnatural sexual offences.

ii. Activity session (Group discussion/Practical)

½ hour

- Demonstration of SAFE kit.

Unit 19 Topic: Forensic psychiatry

Category: Microteaching session

i. Interactive session

1 hour

- Introduction to Forensic psychiatry, Introduction to various terminologies – Illusions, Hallucinations, delusions etc.
- Description of 'Unmada' according to Ayurveda.
- Civil and criminal responsibilities of mentally unsound person
- Differentiation of True and feigned insanity
- Discussion on McNaghten Rules Durham Rule, Currence Rule, Norwegian system etc., used for ascertaining criminal responsibility of a mentally ill person.
- Various acts related to psychiatry like mental health act.
- Details of IPC Sec. 84

ii. Activity session (Group discussion/Practical)

½ hour

- Discussion related to psychiatric cases and landmark judgements.
- Interaction with Forensic Psychiatrist.

Unit 20 Topic: NCISM, Rights and Responsibilities of an Ayurvedic physician

Category: Microteaching session

Course Contents:

i. Interactive session

1hour

- Duties and privileges of physician.
- Structure of National Council of Indian System of Medicine, its jurisdiction and functions.
- Code and conducts as per the NCISM/ CCIM, Rules and Regulations there under.
- Respective State Council of Indian Medicine, its structure, power, voluntary duties.
- Doctor - patient relationship.
- Rights and privileges of patients; Euthanasia.
- Professional secrecy and privileged communication.
- Professional negligence, malpractice and misconduct.
- Indemnity Insurance scheme.
- Etiquette and Ethics as in Indian classics like Kautilyaarthshastra, Manusamriti, Ayurveda etc. Types of physicians and methods of identification.
- Responsibilities of physician before conducting Panchakarma, Surgical and Para surgical procedures.

ii. Activity session – (Group discussion/Practical)

½ hour

- Legal obligations of an Ayurvedic practitioner
- Landmark judgments in the matter of Ayurveda practice
- Discussion on the precautions to be taken by physician before conducting Panchakarma, Surgical and Para surgical procedures.

Unit 21 Topic: Pharmacovigilance and drug interactions

Categories: Microteaching session

Course contents:

i. Interactive session

1hour

Basic

- Introduction of Adverse Drug Reaction (ADR).
- Govt. of India initiative for implementation of pharmacovigilance programme for ASU&H drugs and how to report ADR.
- Need of Pharmacovigilance in Ayurveda.

Advanced

- WHO guidelines on Pharmacovigilance.
- Reported Adverse Drug Reaction of certain Ayurvedic Drugs.
- Action taken report for prevention and management of adverse reaction.
- Misleading advertisements.

ii. Activity session (Group discussion/Practical)

½ hour

- Reporting of suspected area, misleading and causality assessment.
- Discussion on Adverse drug reaction reporting format under pharmacovigilance.
- Material for activity: A sheet with listed possible keywords specific to topics. The participants will make a network diagram as 'study design' pertaining to their identified topics.

Unit- 22Topic: Scope of research and carrier inAgadtantra

Categories: Fundamental of Agadtantra

Course contents:

i. Interactive session

1hour

Basic

- Introduction to gamut of research scope and carrier in Agadtantra.
- Problems in conduction of toxicology study of any poison.
- Roadmap to Literary work/research in the field of Agadtantra, medical jurisprudence and forensic medicine.
- Introduction to animal house.
- Different protocol of toxicological study.

Advanced

- Experimental study design
- Set up of animal house
- OECD toxicity guidelines and others protocol and standards

ii. Activity session- (Group discussion/Practical)

½ hour

- Participants are divided in group and assigned with a topic with key words for experimental research study design.

Unit- 23Topic: Laws regulating Medical Practice

Categories: Microteaching

Course contents:

i. Interactive session

1hour

Basic

- Medical Practitioners Act (In Different States).
- Laws regulating Administration of Hospitals – Nursing Homes Act (At Different States).
- Labor Laws related to the Medical Profession – Shop establishment Act & Minimum Wages Act (In Different States).
- Other Laws affecting Hospitals – Biomedical Waste Management Act – 1998.
- The rules and regulations to be known while beginning an Ayurveda clinic or a hospital (Clinic Establishment Act) in different states.

ii. Activity session- (Group discussion/Practical)

½ hour

- Interaction with lawyer to be familiar with rules and regulations.

Unit- 24 Topic: Laws and amendments important for Medical Practice

Categories: Microteaching

Course contents:

i. Interactive session

1hour

Basic

- Abortion & Medical Termination of Pregnancy Act 1971,
- Pre-Conception & Pre Natal-Diagnostic Technique (Prohibition of Sex Selection) Act 2003,
- Professional negligence & Consumer Protection Act 1986 - related to medical practice.
- Indian Medicine Central Council Act 1970,
- Drug and Cosmetic Act 1940 and New Drugs and Clinical Trial Rules – 2019, poison Act 1919.
- Narcotic Drugs and Psychotropic substances Act 1985,
- Human Organ Transplantation Act 1994
- Drug and magical remedies act 1954

ii. Activity session- (Group discussion/Practical)

½ hour

- Discussion on landmark judgements.

Unit 25 Topic: Field Visit related to Agad Tantra and Vyavahara Ayurveda (1 session /Min. 3hours)

Course Contents:

- Visit to VishaChikitsa Center, Museum, SnakePark, Food and Drug department (identification of food adulterant, food additives, preservatives, substitutes etc.)
- Survey and study of the traditional and folklore vishachikista sampradaya.
- Visit to Postmortem Center,
- Visit to Rehabilitation center,
- Visit to Forensic Science Laboratory (FSL).
- Visit to Pollution Control Board
- Visit to Animal House
- Visit to psychiatry Unit
- Visit to nearby ADR reporting unit

Unit 26 Topic: Exploratory Clinical Practices in Agad Tantra

Categories: Microteaching

Course contents:

i. Interactive session

1hour

- Integration of concept of Agad Tantra in various specialty as enumerated below:
 - Preventive Cardiology
 - Dermatology
 - Trichology
 - Rasayana Chikitsa for Cancer

ii. Activity session- (Group discussion/Practical)

½ hour

- Discussion on how to write a prescription.
- Personal experiences discussion.

Unit 27 Topic: Microteaching session of Study Design

Categories: Research Methodology

Course contents:

i. Interactive session

1hour

- The process of ideation, defining research question/hypothesis/objectives.
- Overview of study methods: literature research, clinical research (case reports, case series, cohort studies, clinical trials), laboratory research (*in-vitro*, *in-vivo*, *in-silico* etc), experimental research (Safety aspect: Protocols for assessing acute, subacute and chronic toxicity studies. Familiarization with AYUSH Guidelines (Rule 170), CDSCO and OECD guidelines) epidemiological designs (descriptive, analytical).
- Information about Institutional Ethics Committee (IEC), Animal Ethics Committee (AEC) and their functions.
- Basics of Statistics for Researcher - Sources and presentation of data, sampling, sampling variability and significance, significance of difference in means, The Chi-square test, correlation and regression, use of SPSS program, Meta analysis.

ii. Activity session

½ hour

Advanced

- Defining objectives, proposing methods for relevant objectives. The participants will propose their objectives, which will be refined by the resource person. Then the participants will propose methods to achieve respective objectives. The resource person will help in designing study for their objectives.
- Material for activity: A sheet with listed possible keywords specific to various methods. The participants will make a network diagram as 'study design' pertaining to their identified topics.

Unit 28 Topic: Research areas in Agad Tantra

Categories: Research Methodology

Course contents:

i. Interactive session Introduction

1hour

- Exploration of various research areas of Agad tantra
- Understanding of various Agadtantra related terminologies like *vishaguna*, *visha kriya* etc. with special reference to contemporary medical science.
- Effect of *ritu* on potency(qualitative and quantitative) of *visha*
- Standardization of various agad formulation and their mode of action
- Study of various controversial plants used in agadtantralike *Ajruha*
- Explanation of various agad concepts in today's perspective e.g. Vishavardhikar bhava

ii. Activity session

½ hour

- Synopsis writing by each group on given topic and discussion
- Preparation of list of area to be explored and research design.

Unit 29 Topic: Overview of Scientific Publications

Categories: Research Methodology

Course contents:

i. Interactive session Introduction

1hour

Basic

- Overview of scientific publications, and scientific literature.

Advanced

- Types of papers, peer review and editorial process, research journals (predatory publications and assessing the authenticity of journals), indexing and online databases.
- Guidelines for publications and reporting standards, introduction to publication ethics. Ethics of Research Paper writing and different issue of concern, chapter writing, Peer review, Critical Writing, Writing a thesis, Project Writing.
- Conflict of interest, Copyright issues, Scientific Fraud and Misconduct – fabrication, falsification, plagiarism etc.

ii. Activity session

½ hour

Advanced

- Searching research literature specific to objectives using PubMed/Scopus, ResearchGate, CTRI, online ICE, mobile apps related to scientific literature. Each participant will also create PubMed alert related to areas of research / clinical interests.
- Material for activity: Every participant will search for literature using personal laptops or mobile phones. A sheet of important links of web-sources will be provided to the participants.

Unit 30 Topic: Getting Ready for Research

Categories: Research Methodology

Course contents:

i. Interactive session

1hour

- Transforming idea into a proposal, research infrastructure, and funding agencies.
- Schemes of AYUSH Ministry,
- Introduction to AYUSH online platforms research infrastructure, AYUSH Informatics Grid
- Searching of Research proposal in various AYUSH stream, NMPB, DBT, DST and ICMR etc.

ii. Activity session

½ hour

- The participants will visit the NAMASTE (National AYUSH Morbidity and Standardized Terminologies Electronic) Portal, National Institute of Indian Medical Heritage for online texts, AYUSH Research Portal, SVAYAM platform, and online sources related to research funding.
- Material for activity: The participants will search respective portals using personal laptops or mobile phones. A sheet of important links of web-sources related to research funding and online courses will be provided to the participants.

Unit 31 Topic: Analytical techniques

Categories: Research Methodology

Course content:

i. Interactive session

1hour

- Introduction of modern instrument and techniques required for toxicological study in the field of Agadtantra.
- Introduction to different analytical Techniques, Basic principles with Observation of procedures during laboratory posting
- Identification and standard quality control criteria of bhasma by using different advanced, sophisticated tools and techniques with working principles.
- Applications and limitations of these instruments in characterization of metals/minerals (raw/processed)
- Analysis of metallic/herbo-mineral formulations with use of modern instruments on modern parameters.
- Use of various ELISA Assay kits in research.
- Screening Spot Tests/Qualitative Test

- Reagents for Common Spot Tests in Toxicology
- Simple Bio-chemical Tests for Heavy metal
- . Alcohol and like substances screening
- Testing for different groups of Poisons
- Volumetric and Gravimetric analytical methods
- Hand on training of following instruments:
 - NPST (Namburi Phased Spot Test)
 - XRD (X-ray Diffraction)
 - FTIR (Fourier Transform Infrared) Spectroscopy
 - NMR (Nuclear Magnetic Resonance)
 - DLS and TGA (Dynamic Light Scattering and Thermogravimetric Analysis)
 - XRF (X-ray Fluorescence)/XPS (X-ray Photon Spectroscopy)
 - SEM (Scanning Electron Microscope)
 - AAS (Atomic Absorption Spectroscopy)
 - ICPAES (Inductively Coupled Plasma Atomic Emission Spectroscopy) & ICPMS (Inductively Coupled Plasma Mass Spectroscopy)
 - ELISA method
 - Other useful techniques.
- Interpretation and reporting of cases – meaning of different terms used by analysts. Negative reporting and its causes. Framing final opinion after results of chemical analysis.

ii. Activity session (Group discussion)

½ hour

- Interactive session topics will be distributed to each group by the Resource person.
- Each group will present about different analytical tools for identification of formulations.
- Material for activity: Each participant will prepare a chart of contemporary analytical instruments with working principles. Each participant will search for available literatures using different online and off line platform on their own.

Unit 32 Topic: Teaching methodology

Categories: Teaching methodology in Agad Tantra

Course contents:

i. Interactive session

1hour

- Different types of teaching learning methods (TLM)
- Techniques and skills in medical teaching and learning, Principles of teaching and lesson planning.
- Teacher-centered teaching and learning approach & student-centered teaching and learning approach
- 9 different learning techniques
 1. Case based learning
 2. Evidence based learning
 3. Problem based learning
 4. Simulation based learning
 5. Social media and video lectures (e learning)
 6. Peer assisted learning
 7. Observation learning
 8. Flipped classroom
 9. Team base learning

- Integration of modern techniques of learning in medical education
- Student evaluation – theory and Practical.
- Question formation Skills.
- Academic Counseling.
- Seminar/Conference organization.
- Use of computer and audio-visual aids.
- Media and its role in Medical Education.
- Teaching skills, administrative skills
- Computer skills in relation to Forensic Medicine
- Introduction to various teaching method like lecture, audio-visual, demonstration, discussion, practical, lecture
- Understanding of Agad Tantra topic using different teaching method with example like understanding of Ballistics by audio-visual teaching method

ii. Activity session

½ hour

- Making group and one topic given to one group and presenting that topic with different teaching method and let the group to decide which teaching method is best for understanding that topic.