

CENTRAL COUNCIL OF INDIAN MEDICINE

SIDDHA MARUTHUVA PERARINGNAR (M.D. (SIDDHA) COURSE

SYLLABUS FOR NANJU MARUTHUVAM (TOXICOLOGY) SPECIALITY

[UNDER THE INDIAN MEDICINE CENTRAL COUNCIL (POST GRADUATE SIDDHA EDUCATION) REGULATIONS, 2016.]

GOAL:

- The Goal of M.D (Siddha) Nanju Maruthuvam PG programme shall be to produce competency and expertise about the knowledge of material toxicity and the clinical management with their antidotes.
- This course aims at equipping the student for doing quality research by importing the research methodology teaching and training .

OBJECTIVES:

At the end of M.D (Siddha) course in Nanju Maruthuvam, the PG Scholars should be able to

- Become capable of independent practice of the concepts of Clinical Toxicology.
- Acquire the knowledge of ensuring safe formulating of Siddha medicine.
- PG Scholars will become conversant about the detoxification (Suddhi process) methods of various drugs before subjecting them to medicinal formulation.
- PG Scholars shall be able to gain the knowledge of establishing the safety of various Siddha formulation through toxicity studies based on international guidelines
- PG Scholars shall be empowered and aquatinted about the concepts of Pharmacovigilance and the maintenance of the Siddha Clinical Toxicological registry.
- PG Scholars shall be able to import about the Concepts of Forensic Medicine and Medical Jurisprudence.
- Gain knowledge about the experimental methods of evaluation and validation of antidotes mentioned in Siddha system of medicine.

FIRST YEAR (Preliminary Examination)					
S.NO	SUBJECT	THEORY	PRACTICAL/ CLINICAL	VIVA	TOTAL MARKS
1	PAPER- I Research Methodology and Bio-Medical Statistics	100	Minor Project 100 (Submission of report -60 marks, Publication/ Presentation-20 marks, Oral-20 Marks) -	-	200
2	PAPER -II Basic Principles of Nanju Maruthuvam	100	--	50	150
SECOND YEAR					
	Essential: Obtain CME credit points through. Seminars/Workshops/Conferences(National/International) Desirable: Publication/ Visits or internship at Industry / Lab / Research institute /Other AYUSH Institutions/ Journal club/ Teaching under graduate Students				
THIRD YEAR (Final Examination)					
S.NO	SUBJECT	THEORY	PRACTICAL/ CLINICAL	VIVA	TOTAL MARKS
1.	PAPER –I Pharmacology and Experimental Toxicology	100	100(Practical 70+Oral 30)	50	250
2.	PAPER -II Principles of Forensic Medicine	100	100(Practical 70+Oral 30)	50	250
3.	PAPER - III Clinical Toxicology	100	100(Practical 70+Oral 30)	50	250
4.	PAPER - IV Nanju Maruthuvam (Siddha Toxicology)	100	100(Clinical 70+Oral 30)	50	250

Dissertation

Maximum marks will be 100 and Minimum marks for passing will be fifty percent.

FIRST YEAR

PAPER- I RESEARCH METHODOLOGY AND BIO-MEDICAL STATISTICS

CLINICAL RESEARCH METHODS UNIT-I

- Measures of disease frequency
- Measures of association/impact in clinical research
- Measurement errors in clinical research
- Validity in clinical research
- Bias in clinical research
- Descriptive bio-statistics
- Inferential bio-statistics
- Formulating research question
- Descriptive studies
- Analytical studies
- Pre-clinical studies
- Experimental studies
- Sampling and sample size estimation
- Survival analysis

CLINICAL RESEARCH METHODS UNIT-II

- Bio-medical literature search / Organization of Literature search (Zoteroetc)
- Developing data collection instruments/Case Record Form (CRF)
- Developing analysis plan
- Use of statistical software for data analysis
- Writing protocol: Principles and Guidelines
- Ethics in clinical research (Siddha, International/National)
- Scientific writing/ Writing the Dissertation (Including University Guidelines)
- Scientific presentation (oral/visual/poster)
- Case report writing / presentation
- Journal critique
- Writing research grants
- Comparative study of traditional medical systems (specifically Chinese, Ayurveda, Homeopathy, Unani)
- Mentorship
- Pedagogic methods

CLINICAL RESEARCH METHODS UNIT-III

- Introduction to National health programmes/health system including AYUSH
- Indian health/medical research systems/bodies including AYUSH ICMR, CCRAS, CCRS, Clinical Trials Registry of India etc
- Orientation to National clinical research guidelines/regulatory bodies CDSCO/DCGI/NABH/QCI Indian GCP for ASU
- Drug standardization as per Pharmacopoeial Laboratory for Indian Medicine (PLIM)
- International guidelines ICH-GCP; WHO guidelines for traditional medicine; WHO/OECD guidelines for animal studies

CLINICAL RESEARCH METHODS UNIT-IV (MINOR PROJECT)

- Cross-sectional study (Hospital-based)
 - Patients; Care-takers; Physicians
 - Cross-sectional study (Community-based)
 - Local traditional health traditions, including traditional bone-setting
 - Community (including tribal populations)
 - Studies using qualitative research methods
 - Clinical epidemiological studies (Hospital-based)
 - Secondary data analysis of clinical data with report
 - Case report/Case-series writing
 - Systematic review
 - Literary research
 - Comparative study of traditional medical systems
 - Report on visit to industry / entrepreneurship ideas
- Publication of any of the above work will get 20 marks

References:

S.No.	Name of the book, Language, Publishers & Year of publication	Author
1	Health research methodology: A Guide for Training in Research Methods, (English), Second Edition, World Health Organization, Manila, 2001	World Health Organization
2	General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine, (English), First Edition, World Health Organization, 2000	World Health Organization
3	Designing clinical research. (English), Third Edition, Philadelphia: Lippincott Williams and Wilkins; 2013	Hulley SB, Cummings SR, Browner SR, Grady D, Newman TB
4	Biostatistics – Principles and Practice, (English), Elsevier, 2017	B Antonisamy, Solomon Christopher, Prasanna Samuel

PAPER -II BASIC PRINCIPLES OF NANJU MARUTHUVAM

1. The concept of 96 Thathuvam Applied in Nanju Maruthuvam,
2. Concept of Tastes in Nanju Maruthuvam
3. Ennvagaithervu
4. Daily disciplines (Naalozhukkam), Seasonal disciplines (Kaalaozhukkam)
5. Determination of poison as per Siddha and Modern texts
6. Unavu Nanju (Food Poison) – Indifference in Taste and Potency - Ill effects of certain food combinations - Paathirabaetham- (Toxicity of food substances due to vessels)
Food Adulteration - Introduction to bureau of Indian standards)
7. Concept of 'Pathiyam' (Diet and Regimen during medication)
8. Siddha Management of Untoward effect during Purgation, Vomiting, Oil Bath, etc.

9. Important features and management of water, air, environmental and soil pollution mentioned in Siddha and modern texts. Occupational health hazards – Preventive measures, industrial safety.
10. Basic principles of preparation of Siddha medicines (Siddhargal marunthakkum adippada ivithigal)
11. Investigate the Adulteration in Siddha Drug
12. Suthimuraigal (purification process of raw drugs)-Importance of purification process, modern technique used to assess the physicochemical changes during suddhi)
13. Untoward effects of unpurified drugs and improper preparation of drugs.
14. Marunthugalin alavu, anupanam matrum thunaimarunthugalin mukkiyathuvam (importance of drug dosages, vehicle and adjuvant mentioned in Siddha literature) – scientific validation about drug dosages, vehicle and adjuvant.
15. Study of pharmacological evaluation of antidote mentioned in siddha literature. -safety and efficacy of antidotes.
16. Pharmacovigilance – Definitions related to pharmacovigilance studies in National and International guidelines, Clinical & observational studies related to pharmacovigilance in Siddha system of medicine
17. Adverse drug reaction, drug and food interaction.
18. Toxic plants, minerals and metals – pharmacological and toxicological aspects published in reputed texts and journals.
19. Standardization procedures of Siddha drugs as per guidelines – Physico chemical property – other chemical analysis – microbial contamination – pesticide residue, heavy metal analysis.
20. Study about medical ethics in Siddha literatures
21. Ahalamaranam
22. Duties and Responsibility of medical officer in suspected poisoning cases.

References:

S.No	Name of Books, Language, Publishers & Year of Publication	Author
1.	Thotrakkirama Aaraichiyum siddha maruthuva varalaarum, (Tamil), Dept of Indian medicine & Homeopathy, Chennai- 106, Third Edition 2003	Dr.Ka.Su.Uthamarayan
2.	Siddha maruthuvanga surukkam(Tamil) Indian Medicine and Homeopathy, Third Edition – 2003	Dr.Ka.Su.Uthamarayan
3.	A Compendium of Siddha doctrine (English), Dept of Indian medicine & Homeopathy, Chennai- 106. First Edition 2005	Dr.Anaivaari R.Anandan
4.	Kaivalya Navaneetham (Tamil), Manivaradhar Padhippugal 2016	Meiyappan
5.	Gunapadam Thathu-Jeeva Vaguppu (Tamil) Department of Indian Medicine and Homeopathy, Fourth Edition 2004	Dr.R.Thiyagarajan
6.	Gunapadam part-I (Tamil), Department of Indian Medicine and Homeopathy, Seventh edition	Ka.Su.Murugesamudhaliyar

7.	Sarakku Suththi muraikal (Tamil) Department of Indian medicine and homeopathy, First Edition 2008	
8.	Parambarai vaidhyam (Tamil) Fifth Edition 2006	C.Kannusamypillai B.Rathina nayakkar
9.	Noinadal noimudhal nadal (Tamil), Department of Indian medicine and homeopathy, Third edition 2003	Dr.M.Shanmugavelu
10.	Noiyilla neri (Tamil), Department of Indian medicine and homeopathy, Third edition 1993	Dr.K.Durairajan
11.	Bogar karpam -300 (Tamil) First edition 2006	C.S.Murugesan
12.	Theraiyar yamaga venba,(Tamil), Dept of Indian medicine & Homeopathy, Arumbakkam, Chennai 106, Second edition – 2003.	
13.	Agasthiyar vaidya sinthaamani (tamil), Dept of Indian medicine & Homeopathy, Chennai – 106, First edition-2008	
14.	Visha vaidya sindhamani (Tamil), B.Rathina nayakkar sons, 2003	Munusamy Mudhaliyar
15.	Anupoga vaidya Navaneetham (English) Department of Indian medicine and homeopathy,First edition 2009	Dr.Anaivaari R.Anandan
16.	Theraiyar maha karisal (Tamil & English), Department of Indian medicine and homeopathy, First edition- 2009	Tamil – Dr.R.Thiyagarajan in English - Dr.Anaivaari R.Anandan,G.Perumal M.A(Tamil), M.A (English), M.A(ling)
17.	Theraiyar yamaga venba II(Tamil), First Edition 1997	Dr.R.Thiyagarajan
18.	The Siddha Formulatory of Indian medicine	
19.	Textbook of social and preventive medicine (English)	Park
20.	The Essentials of Forensic Medicine and Toxicology (English)	Dr.K.S.Narayana Reddy
21.	PLIM Guidelines	
22.	Phytochemical Methods. A Guide to Modern Techniques of plant analysis.	J.B.Harborne, Professor of Botany, University of Reading, London Newyork
23.	Parameters for Quality assessment of Ayurveda and siddha drugs, CCRAS 2005,Siddha Phramacopeia – I & II	
24.	Indian Pharmacopeia	
25.	Bureau of Indian Standards	
26.	Detail Knowledge from the Peer reviewed journals, Palm leaf manuscripts ,Guidelines official websites related to the subject	

THIRD YEAR

PAPER - I PHARMACOLOGY AND EXPERIMENTAL TOXICOLOGY

1. General Pharmacological Principles:

General Pharmacology – History-Nature and sources of Drugs-Route of drug administration- Pharmacokinetics - Pharmacodynamics-Toxicity Studies in Animals-Drug Toxicity in Man-Assay-Evaluation of drugs in Man-Drug interactions in Man.

2. Drugs Acting on Central Nervous Systems :

General Consideration – Introduction-Aliphatic alcohols-General Anaesthetics-Sedatives, Hypnotics and Pharmacotherapy of Insomnia-Antiepileptic drugs-Opioid Analgesics -Analgesics - Antipyretics and Nonsteroidal Anti-inflammatory drugs (NSAIDS)- Psychopharmacology (Antipsychotics drugs, Anti-anxiety drugs, Antidepressants, Psychotropic drugs).

3. Drugs Acting on Autonomic Nervous System:

General considerations (Introductions)-Adrenergic and Adrenergic Blocking Drugs -Cholinergic drugs-Cholinergic blocking drugs-Ganglion stimulating and blocking drugs-Skeletal muscle relaxants-Drug therapy in Parkinsonism.

4. Autacoids and Related Drugs:

Histamine and Antihistaminic drugs-5 - Hydroxytryptamine and antagonists-Angiotensin, Kinins and Prostaglandins.

5. Drugs used in Respiratory Disorders:

Pharmacotherapy of cough – Expectorants-Anti-tussive, Nasal decongestants-Pharmacotherapy of Bronchial asthma.

6. Hormones and Related Drugs:

Thyroid and Antithyroidal drugs-Insulin and oral Antidiabetic drugs-Adrenal cortical steroids-Estrogens and Progestins- Antifertility Agents and Ovulation inducing drugs-Androgens and Anabolic Steroids.

7. Cardiovascular Drugs:

Digitalis and Pharmacotherapy of cardiac failure-Cardiac arrhythmias-Antihypertensive drugs-Vasodilator drugs- Antianginal drugs-Drug used in Atherosclerosis.

8. Drugs Acting on Kidney:

Diuretics and Antidiuretic drugs

9. Drugs Affecting Blood and Blood Forming Organs:

Haematinics- Coagulants-Anti-coagulants, Fibrinolytics and Anti Thrombotic drugs-Blood and plasma volume expanders-Drugs induced Blood dyscrasiasis.

10. Gastro - Intestinal Drugs:

Appetizers- Digestants - Carminative-Appetite suppressants- Agents Lowering serum lipids - Emetics-Antiemetics-Diarrhoea-Constipation-Pharmacotherapy of Peptic ulcer.

11. Antimicrobial Drugs:

Sulfonamides-Quinolones- Penicillins and Antibiotics effective against Gram positive Organism-Aminoglycosides and Antibiotics effective against Gram Negative Organism- Antibiotics effective against both Gram positive and Gram Negative Organism-Antifungal Agents.

12. Chemotherapy and Neoplastic Disease:

Chemotherapy of Tuberculosis-Chemotherapy of Leprosy-Chemotherapy of Malaria-Chemotherapy of Helminthiasis-Chemotherapy of Malignancy.

13. Miscellaneous Drugs :

Pharmacotherapy of Gout and Rheumatoid Arthritis.

14. Experimental Toxicology:

Microbiological assay -Toxicity studies including Acute, sub acute, chronic - General screening of Animals -OECD guide lines -CPCSEA guidelines - Toxicological studies-Evaluation of LC50/LD50-Evaluation of Neurotoxicity-Evaluation of Hepatotoxicity.

PRACTICALS:

Major

1. Drug antagonism studies.
2. Effect of General anaesthetics studies.
3. Effect of Anti convulsants in rat by electro convulsive methods.
4. Action of local anaesthetics in guinea pig studies.
5. Antidepressants studies in rat using octophotometer.
6. Skeletal muscle relaxants studies in rat using rota rod.

Minor

1. Animal handling.
2. Write about experimental animals.
3. OECD Guidelines.
4. CPCSEA Guidelines.
5. Adverse drug reactions of siddha drugs.
6. Instrumental handling in toxicology

References:

S.No.	Name of the book, Language, Publishers & Year of the Publications	Author
1.	Textbook of Essentials of Medical Pharmacology (English), Jaypee Brothers	K.D.Thiripathi
2.	Medical Pharmacology (English),CBS Publishers	Padmaja udaykumar M.D
3.	Drugs screening Methods (Preclinical evaluation of new drugs) (English), Jaypee Brothers	S.K.Gupta
4.	Handbook of Experimental Pharmacology (English),Villach Publications	S.K.Kulkarni
5.	Pharmacology, (English), Elsevierine Publications	Satoskar
6.	Clinical Pharmacology (English), Churchill Livingstone	Lawrence Benette
7.	CPCSEA Guidelines	
8.	OECD Guidelines	
9.	WHO Guidelines	

PAPER -II PRINCIPLES OF FORENSIC MEDICINE

Introduction: Definition-Forensic Medicine-Medical Jurisprudence- Forensic Pathology-History.

1. Legal Procedure:

Police Investigation - The Coroner's inquest - The magistrate inquest - Court of Law - Record of Evidence, Perjury - Medical evidence - Dying Declaration - Oral evidence - Types of witness.
Contact and duties of the Doctor in witness Box -Investigation of the scene of Death -Procedure of Criminal Trial.

2. Medical Law and Ethics:

Indian Medical Council - State Medical Council -State Siddha Medical Council-Central Council of Indian Medicine- warning notice - Duties of Medical Practitioners - Malpractice - Products Liability - Medical indemnity insurance - Consent in Medical Practice - Rules of consent - Human Experimentation - Malingerer.

3. Identification:

Identification date - Race and religion - Sex - Age - General development and stature - Complexion and Features - External Peculiarities - Anthropometric Measurements - Fingerprints and Footprints - Teeth Personal effects - Handwriting Speech and voice - Gait - Tricks of Manner and habit - Memory and education - Age of the fetus - Dactylography - Superimposition - Scars - Tattoo marks - Forensic Odontology.

4. Medico Legal autopsy:

External examination - Internal Examination - Examination of organs - Collection of Blood - Laboratory Procedures - Preservation of Viscera - Causes of Death - Examination of Mutilated bodies - Examination of Bones - Exhumation.

5. Death and its Cause:

The moments of death - Modes of death - Coma - Syncope - Asphyxia - Causes of death - Negative autopsy - Obscure autopsy - Sudden death.

6. Postmortem Changes:

Signs of death - and changes following death - Suspended animation - Changes in the skin, - Changes in the Eye - Cooling of the body. Postmortem Hypostasis - Muscular Changes - Rigor mortis - Putrefaction - Adipocere - Mummification - Estimation of Postmortem interval. Presumption of death - Presumption of Survivor ship.

7. Mechanical Injuries:

Abrasions - Contusions - Incised wounds - Chop wounds - Stab on Punctured wounds - Lacerations - Defense wounds - Firearms - Firearm wounds - wounds from Revolvers and automatic pistol - Peculiar effects of Firearms, Bomb explosion wounds.

8. Regional Injuries:

Head Injuries - Face and skull injuries of brain and Meninges - The mechanism of cerebral injury - Blunt force impacts to the head - Concussion of the Brain - Intracranial hemorrhage - Vertebral column - Spinal cord - complications of chest injuries - Traffic accidents - Investigation of automobile accidents - Railway injuries.

9. Anesthetic and Operative Deaths:

Type of anesthesia-classification -Anesthetic patients-Anesthetic deaths- Death due to surgery-Autopsy and Investigation-Medico legal Aspects.

10. Medico Legal aspect of wounds:

Homicide - Murder - Dowry death - Grievous injury - wound certificate - Causes of death from wounds - Remote Causes - medicolegal aspect of trauma -Histochemical Changes in injured tissues.

11. Thermal deaths:

Cold - Heat - Burns - Scalds - Electrical Injuries - Lightning Stroke - Radioactive substances.

12. Starvation deaths:

Symptoms - Postmortem appearances - Medico legal aspects.

13. Mechanical asphyxia:

Hanging - Strangulation - Throttling on manual strangulation - suffocation - Smothering - Choking - Traumatic asphyxia - Drowning - Diatoms - Sexual asphyxia.

14. Impotence and Sterility:

The Causes of Impotence and Sterility in the male - Causes of impotence and sterility in female - Sterilization Artificial insemination - Surrogate births.

15. Virginity, Pregnancy and Delivery:

Virginity - Pregnancy - Delivery.

16. Sexual Offences:

Rape - Examination of the victim - Examination of the accused - incest unnatural sexual offences - Sodomy - Tribadism-Bestiality - Sexual Perversion - Transvertism - Exhibitionism.

17. Abortion:

The Medical termination of Pregnancy act 1971- The methods of Procuring criminal abortion - Evidence of abortion Postmortem evidence of criminal abortion.

18. Infant Death:

Still births - Dead birth - Signs of Live birth - Battered baby syndrome - Sudden infant death syndrome.

19. Blood Stains:

Examination of Blood stains - Chemical examination - Microscopic and Micro chemical examination - Spectroscopic examination. Serological examination - Blood groups to tissues - DNA - Finger printing.

20. Forensic Psychiatry:

Delirium - Delusion - Hallucination - obsession - Lucid interval - Mutism - Psychosis - Neuroses - Mental Sub normality - Psychosis associated with

organic diseases - Alcoholism - Epileptic psychosis - Functional Psychoses - Schizophrenia - Diagnosis of insanity - The mental health act 1987 - Restraint of the insane - Mental disorder and responsibility - Civil responsibility - Criminal responsibility - Insanity and murder - Automatism - Somnambulism.

21. Artifacts:

Artifacts introduced between death and Autopsy

22. Forensic Science Laboratory:

Laboratory functions.

PRACTICAL:

- Dental Examination for Age estimation.
- Examination of Sexual offences cases.
- Examination of Drunkenness cases.
- Cluster of bones.
- Wound certificate.
- Medical certificates –(Illness, Physical fitness)
- Spotters – weapons, photos, slides, etc.
- Foetus examination for age.
- Identification of Forensic medicine related specimens.
- X-ray findings for age estimation.
- Microscopic examination of sperm, blood, organ tissue, human hairs and animal hairs.

References:

S.No	Name of the book, Language, Publishers & Year of the Publications	Author
1.	The essentials of Forensic Medicine and Toxicology,(English), Jaypee Brothers	Dr.K.S.Narayana Reddy
2.	The text book of Forensic Medicine and Toxicology (English),Paras Medical Publishers	V.V.Pillay
3.	The text book of Forensic Medicine and Toxicology (English), Jaypee Brothers	Dr.Nageshkumar G Rao
4.	Text book of Jurisprudence and Toxicology (English), Lexis Nexis	Modi
5.	Text book of Jurisprudence and Toxicology, (English), CBS Publications	Dr.C.K.Parikh
6.	The text book of Forensic Medicine and Toxicology, (English), Avichal Publishing Company	Dr.Ajay Kumar
7.	Principles of Forensic Medicine and Toxicology, (English), Jaypee Brothers	Dr.Bardale
8.	Fundamentals of Forensic Medicine and Toxicology, (English), Books & allied pvt Ltd	Dr.R.Basu
9.	Principles of Forensic Medicine: Including Toxicology, (English), New Central Book Agency pvt Ltd	Apurba Reddy

PAPER- III CLINICAL TOXICOLOGY

- I. Introduction:**
Definition-Branch of toxicology-Law of poisons-Classification of poisons-Fate of poisons- Action of poisons- diagnosis of Poisoning- Prevention of Poisons- Treatment of Poisons -Duties of a medical practitioner in poisoning cases-Common household poisons.
- II. Agricultural Poisons**
Organophosphorous poisons- Organochlorins- endrin, Flurides, Aluminium Phosphide
- III. Inorganic irritant Poisons (Metals and Non Metals)**
Arsenic-Mercury-antimony-copper-Lead-Manganese- Nitrites- Barium-Phosphorous- Iodine- Chlorine- Formaldehyde.
- IV. Organic irritant Poisons:**
Plants:Ricinuscommunis-croton tiglium- AbrusPrecatorius-SemecarpusAnacardium- calotropis- Ergot- Plumbagozylanica- Capsicum Annum- Helleborusniger- JatrophaCurcus- Gloriosa superb.
Animal: snake bites- Poisonous insects, scorpions – Bees and wasps-cantharides-centipedes.
- V. Corrosive Poisons:**
Mineral acids- Caustic Alkalis-organic acids.
- VI. Deliriant Poisons:**
Datura – Cannabis – Cocaine – Hyocyamus Niger.
- VII. Spinal Poisons:**
StrychnusNuxvomica – Curare-Hemlock
- VIII. Cardiac Poisons:**
Tobacco – Digitalis – Aconite – Nerium – Cerebra Thevetia – Hydrocyamic acid-Cerberaodallum- Cleistanthuscollinus- Quinine.
- IX. Asphyxiants:**
Carbondioxide – Carbonmonoxide – War Gases – Hydrogen sulphide-Methane- Methy-Isocyanate.
- X. CNS Depressants and Stimulants:**
Alcohol – Methyl alcohol – Opium – Barbiturates-Sedatives-Antipsychiatric agents – Bromides – Caffine.
- XI. Miscellaneous Poisons:**
Hydrocarbons- Analgesics and Antipyretics- Acetyl salicylic acid-paracetamol- turpentine-Water intoxication –Insulin.
- XII. Drug dependence and drug abuses.**
Definitions-classifications-Medicolegalimportances-Ethanol-Tobacco-Tranquillisers and sedatives: Barbiturates, benzodiazepines, chloral hydrate-opiates-cocaine-cannabis- amphetamines-Hallucinations-Inhalant abuse.

XIII. Anaesthetic agents.

General anaesthetics-ether-chloroform- cyclopropane, trichloroethylene-spinal anaesthesia- local anaesthesia-Muscle relaxants.

XIV. Food Poisoning:

Poisonous foods – Bacterial-Amoebiasis- protozoal infections- Brucellosis- Botulism- Listeria- rye, oats, barley etc- and other vegetables poisons-Mushrooms – Amanita Mexicana – Groundnuts – Fish poisoning.

XV. Emergency medicine – General and emergency medical management of poisoning.

- Introduction to Toxicogenomics
- Introduction to Nano toxicology

XVI. Analytical Toxicology:

Analytical methods used in toxicology- Detailed study about various analytical methods to identify the chemical substances/drugs/poisons by using Laboratory methods and sophisticated instruments - different qualitative and quantitative analysis

Introduction to the principles of Analytical Toxicology- Reagent Preparation for common Bedside Tests in Toxicology-Demonstration and Hands-on Practice of Bedside Toxicology Tests-Simple Biochemical Color Tests and Tests for Heavy Metals-Demonstration of Chromatographic Immunoassay Method for Drugs-Thin Layer Chromatography-TLC Plate Preparation; sample Preparation, Application, Visualization, and Evaluation – Extraction and Identification of Pesticides from Biological samples-Extraction and Identification of Drugs from Biological samples-Demonstration Training-Water Analysis of Portability(Physical and Chemical)-Demonstration of therapeutic Drug Monitoring of Selected Drugs by High Performance Liquid Chromatography(HPLC).

Practical:

1. Diagnosis of Poisoning in living and dead.
2. Preservation viscera backing.
3. Drunkenness examination.
4. Toxicological Analysis.
5. Spotters:

Identification & drawing of medico-legal inference from common poisons e.g.Datura, castor, cannabis, opium, aconite, copper sulphate, pesticides compounds, marking nut, oleander, Nux vomica ,abrus seeds, snakes, capsium, calotropis, lead compounds & tobacco, stomach wash tube, Ryle's tube.

References:

S.No	Name of the book, Language, Publishers & Year of the Publications	Author
1.	The essentials of Forensic Medicine and Toxicology,(English),Jaypee Brothers	Dr.K.S.Narayana Reddy
2.	The text book of Forensic Medicine and Toxicology (English),Paras Medical Publishers	V.V.Pillay
3.	The text book of Forensic Medicine and Toxicology (English),Jaypee Brothers	Dr.Nageshkumar G Rao
4.	Text book of Jurisprudence and Toxicology (English),Lexis Nexis	Modi
5.	Text book of Jurisprudence and Toxicology, (English), CBS Publications	Dr.C.K.Parikh
6.	The text book of Forensic Medicine and Toxicology, (English), Avichal Publishing Company	Dr.Ajay Kumar
7.	Principles of Forensic Medicine and Toxicology, (English),Jaypee Brothers	Dr.Bardale
8.	Fundamentals of Forensic Medicine and Toxicology, (English), Books & allied pvt Ltd	Dr.R.Basu
9.	Understanding TOXICOLOGY Chemicals	
10.	Guidelines for the interpretation of analytical toxicology results and unit of measurement conversion factors. In: Medical Toxicology, Edition 3. Ed. Dart RC. Baltimore: Lippincott, Williams & Wilkins, 2003: 1796-814 (also available at: http://www.leeds.ac.uk/acb/annals/Webwise/Webwise97-1.html)	Flanagan RJ
11.	Ellenhorn's Medical Toxicology: Diagnosis and Treatment of Human Poisoning. Edition 3. Philadelphia: Lippincott Williams & Wilkins, 2003 (ISBN 0-78172845-2).	Mathew Ellenhorn
12.	Siddha Principles of Social and Preventive medicine. , Department of Indian Medicine and Homoeopathy, Chennai – 600 106. Edition 1, 1999	Dr. G. Durairasan (Author of Tamil version) Dr. Anaivaari R.Anandan (editor)
13.	Principles of Forensic Medicine: Including Toxicology	<u>Apurba Nandy.</u>
14.	The text book of Forensic Medicine and Toxicology (English),Paras Medical Publishers,18 th edition 2017	V.V.Pillay
15.	Their Benefits and Risks	H.Bruno Schiefer,Donold G.Irvine,Shirley C.buzik

PAPER- IV NANJU MARUTHUVAM (SIDDHA TOXICOLOGY)

1. History of Nanju Maruthuvam
2. Nanjuvilakkam-Vakaipadu-Nanjukanippu-Nanjumurivugal and Maruthuvam- definition, classification-signs and symptoms and general management of Nanju (poison) -Thathuvaguppu-Thavaravaguppu-Jeevavaguppu.
3. Detailed study about animal poisoning and zoonotic diseases.
Detailed knowledge about Snake – types of snake bites-snake venom and its toxicological actions-Signs and symptoms of snake bites- Management of snake bite cases-prognostic aspect of envenomation in Siddha and modern aspects.
Detailed study about classification of thel (scorpion) and signs & symptoms of thelkadi and its management
Detailed study about classification of silanthi (spider) and signs & symptoms of silanthikadi and Nanjumurivu (spider bite and its management) other animal bites and its management such as Ants-Wasps-Centepedes-Bees-Rats-Onan-Lizards-Leech-Frog-Dog-Cat-Monkey-Horse-Fox-Unknown bite-Crocodil-Beetle-Pig – mosquito – role of mosquito in communicable diseases.
Jeevaveri Nanju and Maruthuvam (Various Animal Bites)
4. Ovvamainoigal and its management - Allergic Diseases – household, drug, food, cosmetics, preservatives, coloring agents, food additives etc.
5. Detail study about Kanakadi – urticaria
6. Kudiverinoi – alcoholism and its management
7. Detail study about Pugaielai Nanju (Tobacco chewing and smoking) and its management Siddha and contemporary view
8. Detail knowledge about substance abuse and its Siddha and contemporary management – de-addiction
9. Details about Idumarunthu.
10. General Siddha antidotes
11. Preparation of anti dotes- different formulations mentioned in Siddha literature
12. Study about Nanjumurivu (anti dotes) in various classical Siddha texts.
13. Review the journals – scientific evaluation of Siddha antidotes against various nanjugal (poisons).
14. Untoward effects of unpurified drugs and improper preparation of drugs and its management.
15. Medicine preparation - siddha antidote & Purification process of raw drugs.

CLINICAL:

Major

- A. Preparation of antidotes for poisons.
- B. Purification process of siddha raw drugs.

Minor

- A. Description about poisons.
- B. Clinical examination of poisoning cases.
- C. Diagnose of poisonings.

Spotters: Poisons (Plants, Metals, Minerals and Animal Products)

References:

S.No	Name of the book, Language, Publishers & Year of the Publications	Author
1.	Nanjumurivu Nool (Tamil), 4 th edition 2005	Dr.Pon.Gurusionmani
2.	Vidasankara Aarudam (Tamil)	
3.	Naaga Aarudam	
4.	Sarppa Aarudam	
5.	Siddha Formulatory IMPCOPS (Tamil)	
6.	Sarabendiran vaidhya muraigal – Visha roga sikitchai (Tamil),5 th edition 2005	Dr.S.Venkatrajan
7.	Visha Vaidhya Sinthamani (Tamil), 2012	Sirumanavur Munusamy Mudhaliyar
8.	Gunapadam Thathu – Jeevam Vaguppu (Tamil),4 th edition 2004	Dr.R.Thiyagarajan
9.	A Complete Manual on Siddha External Therapies,ShanlaxPublications,Maudurai,Tamilnadu,2017	Dr.G.Senthilvel.,M.D(S),Ph.D Dr.J.Jeyavenkatesh.,M.D(S),Ph.D
10.	Agasthiyar vaithya thirattu (Tamil)	
11.	Pogar elayirathil Siddha Maruthuva kanimangal (Tamil)	Dr.I.Sorna Mariyammal
12.	Agala marana nool (Tamil,) Siddha marma Veliyidu, 2 nd edition - 1968	S.Chidamparathanu pillai
13.	Bogar Karpam 300 (Tamil),1 st edition 2006	C.S.Murugesan
14.	Gunapadam Thathu – Jeevam Vaguppu (Tamil),4 th edition 2004	Dr.R.Thiyagarajan
15.	Gunapadam part-I (Tamil), Department of Indian Medicine and Homeopathy, Seventh edition 2003	Ka.Su.Murugesamudhaliyar
16.	Agala marana nool (Tamil,) Siddha marma Veliyidu, 2 nd edition - 1968	S.Chidamparathanu pillai
17.	Agasthiyar vaithya thirattu (Tamil)	
18.	Pogar elayirathil Siddha Maruthuva kanimangal (Tamil)	Dr.I.Sorna Mariyammal

DISSERTATION

Kindly refer the regulation 11 of IMCC (Post-Graduate Siddha Education) regulations, 2016.