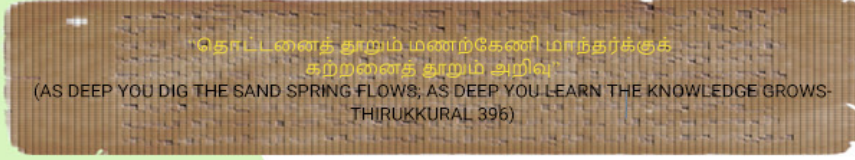


**Course curriculum for Second Professional (B.S.M.S)**

**(PRESCRIBED BY NCISM)**



**Bachelor of Siddha Medicine and Surgery (B.S.M.S)**

**(SUBJECT CODE : SIDUG – GMM)**

**Gunapadam- Marunthiyal (Materia Medica- Pharmacology)  
Paper I Mooligai (Plant Kingdom) Paper II Thathu & Jeevam  
(Metals, Minerals and Animal Kingdom)**

(Applicable from 2021-22 batch, from the academic year 2023-24 onwards for 5 years or until further notification by NCISM, whichever is earlier)



**BOARD OF UNANI, SIDDHA AND SOWA-RIGPA  
NATIONAL COMMISSION FOR INDIAN SYSTEM OF MEDICINE  
NEW DELHI-110058**

## II Professional Siddha Maruthuva Arignar (B.S.M.S)

### Subject Code : SIDUG – GMM

### Summary

<b>Total number of Teaching hours: 320</b>			
<b>Lecture hours(LH)-Theory</b>		<b>100</b>	<b>100(LH)</b>
Paper I	50		
Paper II	50		
<b>Non Lecture hours(NLH)-Theory</b>		<b>220</b>	<b>220(NLH)</b>
Paper I	33		
Paper II	33		
<b>Non Lecture hours(NLH)-Practical</b>			
Paper I & II	154		

<b>Examination (Papers &amp; Mark Distribution)</b>					
Item	Theory Component Marks	Practical Component Marks			
		Practical	Viva	Elective	IA
Paper I	100	100	20	10 (Set-SA)	20
Paper II	100				
<b>Sub-Total</b>	200	150			
<b>Total marks</b>	350				

**Important Note:-**The User Manual II B.S.M.S is a valuable resource that provides comprehensive details about the curriculum file. It will help you understand and implement the curriculum. Please read the User Manual II before reading this curriculum file. The curriculum file has been thoroughly reviewed and verified for accuracy. However, if you find any discrepancies, please note that the contents related to the MSE should be considered authentic.

In case of difficulty and questions regarding curriculum write to [cur.imp@ncismindia.org](mailto:cur.imp@ncismindia.org)

## **PREFACE**

The debate over whether Medicine is an art, or a science is perhaps a question that has troubled physicians over the last few centuries. However, that debate is not found anywhere in the Tamil-speaking world. Here, the art and science of medicine have always been considered two sides of the same coin. The art of caring and comfort, amalgamated with the traditional wisdom of the eons, guided by common sense and a scientific fervor, seems to be the need of the hour. The science of medicine might turn out ineffective, perhaps even pernicious, without all these other facets. The course Gunapadam Marunthiyal (Materia Medica-Pharmacology) aims to reconcile the long last tradition of the scientific study of the art of medicine.

According to TheraiyarVenba, to be considered able, a Siddha physician is expected to have proficiency in Gunapadam. Gunapadam Marunthiyal (Materia Medica-Pharmacology) includes but is not limited to the study of the origin, characteristics, composition, Suddhi (Purification), and therapeutic uses of drugs that are of plant, metal, mineral, and animal origin. This course discusses in detail the Suvai, Thanmai, Pirivu, and Thanimaanbu, from the perspective of Siddha pharmacology, of various commonly used herbs, shrubs, climbers, trees, and drugs of metal, mineral, and animal origin.

In addition to the therapeutic uses that are universally discussed, the esoteric aspects of the drugs have been touched upon so as to instigate a spirit of inquiry among students. The curriculum demands that students step out of their classrooms and their conventional learning modalities. This has been achieved through the extensive use of teaching aids such as video clips, hands-on demos, herb hunts, field trips, quizzes, and so on. Further group activities like discussion and literature surveys are also used to instil a sense of brotherhood among the students. To preserve the fading but abundant repository of knowledge of traditional Vaithiyars, activities have been assigned to the students to document the highly guarded and concealed wisdom. To meet the emerging need for greater understanding of pharmacology principles and the therapeutic potential of naturally occurring substances, points of research have been sprinkled throughout the curriculum. In addition to Siddha Pharmacology, Fundamentals of Modern Pharmacology have also been made part of the course curriculum to facilitate a better understanding of current scientific literature and empower the students on the research front. Furthermore, to prime the students towards clinical sciences, points of clinical interest are also included in the course.

We hope with all certainty that the course Gunapadam Marunthiyal will serve as a rosette stone to understanding the Siddha system in all its entirety.

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## Course Code and Name of Course

Course code	Name of Course
SIDUG–GMM	Gunapadam- Marunthiyal (Materia Medica- Pharmacology) Paper I Mooligai (Plant Kingdom) Paper II Thathu & Jeevam (Metals, Minerals and Animal Kingdom)

**Table 1- Course learning outcomes and matched PO**

<b>SR1 CO No</b>	<b>A1 Course learning Outcomes (CO) SIDUG – GMM At the end of the course SIDUG – GMM, the students should be able to-</b>	<b>B1 Course learning Outcomes matched with program learning outcomes.</b>
CO1	Apply the basic Siddha principles of Pancha bootham, Suvai, Thanmai, Pirivu, and Thanimaanbu with Gunapaadam Mooligai, Thathu and jeevam (Siddha Materia Medica) to choose appropriate raw drug .	PO3,PO9
CO2	Discriminate and select the Mooligai(plant) for therapeutic use considering the Organoleptic characters, Seikkaikal (Action), Pothu gunam (General properties), Common and Therapeutic uses, Chemical constituents.	PO5,PO9,PO10
CO3	Prioritize and choose Thathu porutkal(Metals/Minerals), Navamanikal(Gems) for therapeutic use considering the Seikaikal (Action), Pothugunam (General Properties), Suddhi (Purification), Geological description, Common and medicinal uses.	PO5,PO10
CO4	Integrate the Seikkaikal (Action), Pothugunam (General Properties), Suddhi (Purification), Common and Therapeutic uses to decide drug pertaining to Animal Kingdom.	PO5,PO10
CO5	Infer the components of General Pharmacology (Route of Administration, Pharmacokinetics, Pharmacodynamics and Adverse Drug Reaction)with activity of Siddha therapeutic drugs.	PO9
CO6	Demonstrate the Siddha purification methods of Raw drugs (Plant origin, Metals, Minerals and Animal origin), qualitative Analysis of Plant and Drug Extracts and Identification of Raw drugs (Plant origin, Metals, Minerals and Animal origin) .	PO3,PO9
<b>SIDUG-GMM - II B.S.M.S, NCISM</b>		
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CO7	Appraise and value the selection of drug in clinical scenario considering basic Siddha principles like Mukkutra Verupaadukal.	PO3
CO8	Discuss recent research updates for Mooligaikal(Plants), Thathuporutkal (Metals, Minerals) and Jeeva porutkal (Animal origin).	PO11
CO9	Discover esoteric aspects (Mooligaikalai sekkarithal, kaayakarpa Mooligaikal, Mooligaikalai karupakuthal, Natchathira mooligaikal and pulluruvi) of Plants, substitute and imposters, verses, proverbs for some plants, and animal origin.	PO5

**Table 2 : Contents of Course**

<b>Paper 1</b>					
<b>Sr. No</b>	<b>A2 List of Topics</b>	<b>B2 Term</b>	<b>C2 Marks</b>	<b>D2 Lecture hours</b>	<b>E2 Non- Lecture hours</b>
1	<p><b>1. Introduction to Marunthiyal and basic principles of Marunthiyal</b></p> <ul style="list-style-type: none"> <li>• 1.1. Mooligaikalai segarithal</li> <li>• 1.2. Karpa mooligaikal</li> <li>• 1.3. Mooligaikalai karuppakuthal</li> <li>• 1.4. Attakarma mooligaikal</li> <li>• 1.5. Natchathira mooligaikal</li> <li>• 1.6. Sthala virutcham</li> <li>• 1.7. Pulluruvi</li> </ul>	1	3	2	2
2	<p><b>2. Gunapadam - Mooligai Sedigal part - I (Herbs)</b></p> <ul style="list-style-type: none"> <li>• 2.1. Agathi - Sesbania grandiflora</li> <li>• 2.2. Akkarakkaram - Anacyclus pyrethrum</li> <li>• 2.3. Athimathuram - Glycyrrhiza glabra</li> <li>• 2.4. Athividayam - Aconitum heterophyllum,</li> <li>• 2.5. Abini &amp; kasakasaa - Papaver somniferum,</li> <li>• 2.6. Ammaan patcharisi - Euphorbia hirta</li> <li>• 2.7. Araththai - Alpinia galanga</li> <li>• 2.8. Alisivithai - Linum usitatissimum</li> <li>• 2.9. Avuri – Indigofera tinctoria</li> <li>• 2.10. Arukampul – Cyanodon dactylon</li> <li>• 2.11. Adutheendapalai- Aristolochia bracteolate</li> <li>• 2.12. Isappukolvidhai- Plantago ovata</li> <li>• 2.13. Inji - Zingiber officinale</li> <li>• 2.14. Impooral – Hedyotis umbellata</li> <li>• 2.15. Rudra jadai- Ocimum basilicum</li> <li>• 2.16. Uzhundu-Vigna mungo</li> <li>• 2.17. Umaththai – Datura metal and its types</li> <li>• 2.18. Ellu- Sesamum indicum</li> <li>• 2.19. Elam – Elatteria cardamomum and its types</li> <li>• 2.20. Omam,– Carpum copticum,</li> <li>• Kurosani omam -Hyoscyamus niger</li> <li>• 2.21. Orithazhtamarai - Hybanthus enneaspermus</li> <li>• 2.22. Orilai tamarai-Nervilia aragonna</li> <li>• 2.23. Kanja - Cannabis sativa</li> </ul>	1	24	13	8

	<ul style="list-style-type: none"> <li>• 2.24. Kadalai- <i>Cicer arietinum</i></li> <li>• 2.25. Kadugu- <i>Brassica juncea</i></li> <li>• 2.26. Kadugurokani-<i>Picrorhiza scrofulariflora</i></li> <li>• 2.27. Kantankattari-<i>Solanum surattense</i></li> <li>• 2.28. Kanduparangi- <i>Clerodendron serratum</i></li> <li>• 2.29. Karanthai and its types - <i>Spaeranthus indicus</i></li> <li>• 2.30. Karisalankanni - <i>Eclipta prostrata</i></li> <li>• 2.31. Karpooravalli – <i>Anisochillus carnosus</i></li> <li>• 2.32. Karumbu- <i>Saccharum Officinarum</i></li> <li>• 2.33. Kala - <i>Carrisa carandus</i></li> <li>• 2.34. Kattrazhai – <i>Aloe barbadensis</i>,</li> <li>• Kariyabolam - <i>Aloe littoralis</i></li> <li>• 2.35. Kanchori - <i>Tragia involucrata</i></li> <li>• 2.36. Kattathi- <i>Bauhauinia tomentosa</i></li> <li>• 2.37. Karai- <i>Catunaregum spinose</i></li> <li>• 2.38. Karpokarisi – <i>Psoralea corylifolia</i></li> <li>• 2.39. Kitchilikizhangu - <i>Curcuma zeodaria</i></li> <li>• 2.40. Keraikal Aarai - <i>Marselia quadrifolia</i>,</li> <li>• Puliarai- <i>Oxalis corniculata</i>,</li> <li>• Manali- <i>Gisekia pharnaceoides</i>,</li> <li>• Puthina- <i>Mentha arvensis</i></li> <li>• 2.41. Keezhanelli - <i>Phyllanthus amarus</i>,</li> <li>• Senkeezhanelli – <i>Phyllanthus urinaria</i>,</li> <li>• 2.42. Kunkumapoo – <i>Crocus sativus</i></li> <li>• 2.43. Kudiyottupoondtu - <i>Argemone Mexicana</i></li> <li>• 2.44. Kuppaimeni – <i>Acalypha indica</i></li> <li>• 2.45 .Kuruver- <i>Vetiveria zizanoides</i></li> <li>• 2.46, Kodiveli and its types - <i>Plumbago indica</i></li> <li>• 2.47. Kothumalli- <i>Cyperus rotundus</i></li> <li>• 2.48. Kottam - <i>Costus speciosus</i></li> <li>• 2.49. Korai- <i>Cyperus rotandus</i></li> <li>• 2.50. Jadamanji-<i>Nardostachys grandiflora</i></li> <li>• 2.51. Chathakuppai- <i>Anethum graveolens</i></li> <li>• 2.52. Charanai- <i>Trianthema decandra</i></li> <li>• 2.53. Sivathai- <i>Operculina turpethum</i></li> <li>• 2.54. Shivanar vembu- <i>Indigofera aspalathoides</i></li> <li>• 2.55. Chitramutti- <i>Pavonia zeylanica</i></li> </ul>				
3	<p><b>3.Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</b></p> <p><b>3.1 GUNAPADAM MOOLIGAI - MARANKAL (TREES)</b></p> <ul style="list-style-type: none"> <li>• 3.1.1. Asogu - <i>Saraca asoca</i></li> </ul>	2	37	20	13



- 3.1.2. Atti - *Ficus racemosa* ,
- Seemai Aththi – *Ficus carica*
- Pei aththi – *Ficus hispida*
- 3.1.3. Arasu - *Ficus religiosa*
- 3.1.4. Azhinjil - *Alangium salvifolium*
- 3.1.5. Alamaram - *Ficus benghalensis*
- 3.1.6. Lavangam - *Syzygium aromaticum*
- 3.1.7. Lavangapattai - *Cinnamomum verum*
- 3.1.8. Iluppai - *Madhuca longifolia*
- 3.1.9. Ilaikalli - *Euphorbia ligularia*
- 3.1.10. Eechu-Sitrechu - *Phoenix sylvestris*,
- Preechu - *Phoenix dactilifera*
- 3.1.11. Usilamaram- *Albizia odoratissima*
- 3.1.12. Rudraksham - *Elacocarpus sphaericus*
- 3.1.13. Etti – *Strychnos nux-vomica*
- 3.1.14. Elumichai - *Citrus limon* ,
- Kadaranaraththai - *Citrus medica*,
- Kichilipazham - *Citrus aurantium*
- 3.1.15. Udimaram – *Lannea coromandelica*
- 3.1.16. Kadukkai - *Terminalia chebula*
- 3.1.17. Kamuku, Kalippakku - *Areca catechu*
- 3.1.18. Karungali -*Acacia catechu*
- 3.1.19. Karkadagasinghi - *Rhus succedanea*
- 3.1.20. Kalyanamurku – *Erythrina variegata*
- 3.1.21. Kungiliam – *Shorea robusta*
- 3.1.22. Kunthirikkam- *Boswellia serrata*
- 3.1.23. Kondrai - *Cassia fistula* and its types
- 3.1.24. Senbagam - *Michelia champaca*
- 3.1.25. Chandanam - *Santalum album*
- 3.1.26. Jaathikaai, Jaathipathri – *Myristica fragrans*
- 3.1.27. Shambirani - *Styrax benzoin*
- 3.1.28. Sirunaagapoo – *Mesua nagassarium*
- 3.1.29. Cheekai - *Acacia sinuata*
- 3.1.30. Serankottai – *Semecarpus anacardium*
- 3.1.31. Thavasumurungai- *Rungia parviflora*
- 3.1.32. Thalishapathiri – *Abies spectabilis*
- 3.1.33. Thaantri – *Terminalia bellirica*
- 3.1.34. Thengumaram - *Cocos nucifera*
- 3.1.35. Devadaru – *Cedrus deodora*
- 3.1.36. Thettran - *Strychnos potatorum*
- 3.1.37. Naaval – *Syzygium cumini*
- 3.1.38. Neeradimuthu – *Hydnocarpus laurifolia*
- 3.1.39. Nuna – *Morinda tinctoria*
- 3.1.40. Nelli- *Phyllanthus emblica*,
- Arunelli - *Phyllanthus acidus*
- 3.1.41. Nervalam - *Croton tiglium*
- 3.1.42. Pala- *Artocarpus heterophyllus*
- 3.1.43. Palasu - *Butea monosperma*
- 3.1.44. Panai – *Borassus flabellifer*
- 3.1.45. Paathiri – *Stereospermum suaveolens*

- 3.1.46. Palai – *Manilkara hexandra*,
- Ezhilapaalai – *Alstonia scholaris*,
- Vetpalai – *Wrightia tinctoria*,
- Kudsapaalai- *Holarrhena pubescens*,
- Theempalai – *Wattakaka volubilis*.
- 3.1.47. Pidangunari – *Prenna tomentosa*
- 3.1.48. Pungu – *Pongamia pinnata*,
- Manipungu - *Sapindus laurifolia*
- 3.1.49. Puli – *Tamarindus indica*
- 3.1.50. Poovarasu - *Thespesia populnea*
- 3.1.51. Magizh- *Mimusops elengi*
- 3.1.52. Mangusthan - *Garcinia mangostana*
- 3.1.53. Maramanjai – *Coscinium fenestratum*
- 3.1.54. Madanakamappu – *Cycas circinalis*
- 3.1.55. Marakarai – *Catunaregum spinosa*
- 3.1.56. Maruthu - *Terminalia arjuna*
- 3.1.57. Maasikkai – *Quercus infectoria*
- 3.1.58. Maa – *Mangifera indica*
- 3.1.59. Maadhulai - *Punica granatum*
- 3.1.60. Maavilangu - *Crataeva magna*
- 3.1.61. Murungai – *Moringa oleifera*
- 3.1.62. Mungil – *Bambusa arundinacea*
- 3.1.63. Valampurikkai - *Helicteres isora*
- 3.1.64. Vadhanarayan – *Delonix elata*
- 3.1.65. Valuzhuvai – *Celastrus paniculatus*
- 3.1.66. Vilvam - *Aegle marmelos*
- 3.1.67. Vilamaram – *Limonia acidissima*
- 3.1.68. Vellilothram - *Symplocos racemosa*
- 3.1.69. Vembu – *Azadirachta indica*
- 3.1.70. Vel - *Acacia nilotica* and its types

### **3.2 GUNAPADAM MOOLIGAI - PERUNSEDIKAL (SHRUBS)**

- 3.2.1. Amukkara – *Withania somnifera*
- 3.2.2. Azhavanam - *Lawsonia inermis*
- 3.2.3. Aadathodai - *Justicia adhatoda*
- 3.2.4. Aamanakku – *Ricinus communis* and its types
- 3.2.5. Aavarai - *Cassia auriculata*
- 3.2.6. Isangu – *Clerodendrum inerme*
- 3.2.7. Erukku – *Calotropis gigantea*
- 3.2.8. Kadalazhinjil - *Salacia reticulata*
- 3.2.9. Karunaithandu – *Amorphophallus paeoniifolius*
- 3.2.10. Kalli - *Euphorbia ligularia* and its types
- 3.2.11. Kari vembu – *Murraya koenigi*
- 3.2.12. Chundai – *Solanum torvum*
- 3.2.13. Sembarathai - *Hibiscus Rosa-sinensis*
- 3.2.14. Chembai – *Sesbania sesban*

	<ul style="list-style-type: none"> <li>• 3.2.15.Parangipattai - Smilax china</li> <li>• 3.2.16.Thazhuthazhai – Clerodendrum phlomidis</li> <li>• 3.2.17.Thazhai- Pandanus odorifer</li> <li>• 3.2.18. Nanthiyavattam- Tabernaemontana divaricata</li> <li>• 3.2.19. Notchi – Vitex negundo</li> <li>• 3.2.20. Milakaranai - Toddalia asiatica</li> </ul>				
4	<p><b>4. Gunapadam - Mooligai Sedigal part - II (Herbs)</b></p> <ul style="list-style-type: none"> <li>• <b>SEDIKAL (HERBS - PART II)</b></li> <li>• 4.1. Seerakam- Cuminum cyminum and Types</li> <li>• 4.2. Sukku- Zingiber officinale</li> <li>• 4.3. Cheruppadai - Mollugo lotoides</li> <li>• 4.4. Thamarai - Nelumbo nucifera</li> <li>• 4.5. Thaivaelai -Gynondropis gynandra</li> <li>• 4.6. Thutthi- Abutilon indicum</li> <li>• 4.7. Thumbai-Leucas aspera</li> <li>• 4.8. Thulasi - Ocimum sanctum and Types</li> <li>• 4.9. Thuthuvelai - Solanum trilobatum</li> <li>• 4.10. Thottarchinungi – Mimosa pudica</li> <li>• 4.11. Naththaichoori - Spermaceoce hispida</li> <li>• 4.12. Naabi – Aconitum ferox</li> <li>• 4.13. Nayuruvi – Achyranthes aspera</li> <li>• 4.14. Nilavaambu –Andrographis paniculata</li> <li>• 4.15. Nilapanai - Curculiga orchioides</li> <li>• 4.16. Nilavarai- Cassia senna</li> <li>• 4.17. Nirmulli - Hygrophylla auriculata</li> <li>• 4.18. Neichitti - Vernonia cicerea</li> <li>• 4.19. Nerunjil - Tribulus terrestris.</li> <li>• Seppu Nerunjil – Indigofera enneaphylla</li> <li>• 4.20. Pachilai - Garcinia xanthochymus</li> <li>• 4.21. Paruththi – Gossypium arboreum</li> <li>• Semparuththi – Gossypium herbaceum</li> <li>• 4.22. Parpadagam – Hedyotis corymbosa</li> <li>• 4.23. Pitharohini- Coptis teeta</li> <li>• 4.24. Peelai – Aerva lanata</li> <li>• 4.25. Pugaiyilai - Nicotiana tobacum</li> <li>• 4.26. Perungayam - Ferula asafetida</li> <li>• 4.27. Poduthalai - Phyla nodiflora</li> <li>• 4.28. Ponnanganni – Alternanthera sessilis</li> <li>• 4.29. Manjal – Curcuma longa, and its types</li> <li>• Kasthuri manjal- Curcuma aromatica</li> <li>• 4.30. Manjitti - Rubia cardifolia</li> <li>• 4.31. Manathakkali – Solanum nigrum</li> <li>• 4.32. Malli - Jasminum grandiflorum</li> </ul>	3	22	10	7

	<ul style="list-style-type: none"> <li>• 4.33. Masipathiri - <i>Artemisia nilagiriga</i></li> <li>• 4.34. Mookkiratai - <i>Boerhaavia difussa</i></li> <li>• 4.35. Vasambu – <i>Acorus calamus</i></li> <li>• 4.36. Vandukolli - <i>Cassia alata</i></li> <li>• 4.37. Vaividangam - <i>Embelia ribes</i></li> <li>• 4.38. Vazhai- <i>Musa paradisica</i></li> <li>• 4.39. Vilamichamver - <i>Plectranthus vetiveroides</i></li> <li>• 4.40. Vishnukiranthi – <i>Evolvulus alsinoides</i></li> <li>• 4.41. Venkayam - <i>Allium cepa</i></li> <li>• Kattuvengayam - <i>Urgenia indica</i></li> <li>• 4.42. Venthayam – <i>Trigonella foenum-graecum</i></li> <li>• 4.43. Vellarugu - <i>Enicostemma axillare</i></li> <li>• 4.44. Velluli - <i>Allium sativum</i></li> <li>• 4.45. Vaelai – <i>Naaikadugu - Cleome viscosa</i></li> </ul>				
5	<p><b>Gunapadam - Mooligai Kodigal (Climbers &amp; Creepers)</b></p> <p><b>5. KODIKAL (CREEPERS)</b></p> <ul style="list-style-type: none"> <li>• 5.1. Avarai-Lablab <i>purpureus</i></li> <li>• 5.2. Akasakarudan -<i>Corrolocarpus epigaeus</i></li> <li>• 5.3. Attuthumatti-<i>Citrullus colocynthis</i></li> <li>• 5.4. Echuchuramooli - <i>Aristolochia indica</i></li> <li>• 5.5. Uttamani- <i>Pergularia daemia</i></li> <li>• 5.6. Uppilangodi-<i>Mimosa paniculata</i></li> <li>• 5.7. Kallapai kizhangu- <i>Gloriosa superba</i></li> <li>• 5.8. Kaliyana poosanikai- <i>Benincasa hispida</i></li> <li>• 5.9. Kazharchikodi- <i>Caesalpinia bonduc</i></li> <li>• 5.10. Kakkanam- <i>Clitoria ternatea</i></li> <li>• 5.11. Kakkaikolli - <i>Anamirta cocculus</i></li> <li>• 5.12. Kurinjan - <i>Gymnema sylvertre</i></li> <li>• 5.13. Kuntri - <i>Abrus precatorius</i></li> <li>• 5.14. Kovai - <i>Coccinia grandis</i></li> <li>• 5.15. Seenthil.- <i>Tinospora cordifolia</i> and <i>Porseenthil</i></li> <li>• 5.16. Thaneervittan kizhanku - <i>Asparagus racemosus</i></li> <li>• 5.17. Thippili, Thippiliver - <i>Piper longum</i></li> <li>• 5.18. Thirakshai - <i>Vitis vinifera</i></li> <li>• 5.19. Nancharuppan - <i>Tylophora indica</i></li> <li>• 5.20. Nannari - <i>Hemedesmus indicus</i></li> <li>• 5.21. Neerbirahmi - <i>Bacopa monnieri</i></li> <li>• 5.22. Pirandai-<i>Cissus quadrangularis</i></li> <li>• 5.23. Poonaikali-<i>Mucuna pruriens</i></li> <li>• 5.24. Milagu. Sevviam - <i>Piper Nigrum</i></li> <li>• 5.25. Valmilagu - <i>Piper cubeba</i></li> <li>• 5.26. Musumusukkai - <i>Mukia madraspatana</i></li> </ul>	3	14	5	3

	<ul style="list-style-type: none"> <li>• 5.27.Mudakatran - Cardiospermum helicacabum</li> <li>• 5.28. Vallarai - Centella asiatica</li> <li>• 5.29.Vellarikai - Cucumis sativus</li> <li>• 5.30. Vetrilai - Piper betle</li> </ul>			
<b>Total Marks</b>		<b>100</b>	<b>50 hr</b>	<b>33 hr</b>

<b>Paper 2</b>					
<b>Sr. No</b>	<b>A2 List of Topics</b>	<b>B2 Term</b>	<b>C2 Marks</b>	<b>D2 Lecture hours</b>	<b>E2 Non-Lecture hours</b>
6	<ul style="list-style-type: none"> <li>• <b>1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</b></li> <li>• 1. Introduction to Thathuporutkal</li> </ul> <p><b>1.1. Ulogangal (Metals)</b> (Detailed study about the following raw drug)</p> <ul style="list-style-type: none"> <li>• Describe Verupeyarkal(Synonyms), Metallic name, Vernacular names, Identification, Distribution, Pothugunam (General Properties), Suvai(Taste), Veeriyam (Potency), Pirivu (Division), Varieties, Natppu charakku (Agonist), Pagai charakku (Antagonist), Suddhi (Purification) , Therapeutic action, Dose, Uses, &amp; name of the different formulations pertaining to this drug.</li> </ul> <p><b>Medical geology</b></p> <ul style="list-style-type: none"> <li>• Define Geo name, chemical name, chemical formula, colour, luster, streak, hardness, fracture and geo chemical uses of the metals.</li> <li>• 1.1.1 Ayam (Iron)</li> <li>• 1.1.2. Ekkhu(Steel)</li> <li>• 1.1.3. Kareyam(Lead)</li> <li>• 1.1.4. Kandham(Magnetic Oxide of Iron)</li> <li>• 1.1.5. Thambram(Copper)</li> </ul>	1	24	15	9

	<ul style="list-style-type: none"> <li>• 1.1.6. Nagam(Zinc)</li> <li>• 1.1.7. Thankam(Gold)</li> <li>• 1.1.8. Mandooram(Ferrous Ferric Oxide)</li> <li>• 1.1.9. Velvangam(Tin)</li> <li>• 1.1.10. Velli</li> </ul> <p><b>1.2. Pancha sootham (Mercury and Mercurial Compounds)</b></p> <ul style="list-style-type: none"> <li>• 1.2.1. Rasam (Mercury)</li> <li>• 1.2.2. Rasa Sindooram ( Red Sulphide of mercury)</li> <li>• 1.2.3. Lingam(Cinnabar)</li> <li>• 1.2.4. Pooram, Calomel ( Hydragyrum subchloride)</li> <li>• 1.2.5. Veeram Corrosive sublimate (Hydragyrum perchloride)</li> </ul> <p><b>1.3. Introduction to general pharmacology with reference to siddha drug and principles.</b></p> <ul style="list-style-type: none"> <li>• 1.3.1. Introduction</li> <li>• 1.3.2. Route of Drug Administration</li> <li>• 1.3.3. Pharmacokinetics</li> <li>• Absorption and Distribution, Biotransformation &amp; Excretion</li> <li>• 1.3.4. Prodrug</li> <li>• 1.3.5. Pharmacodynamics</li> <li>• 1.3.6. Adverse Drug Reactions.</li> </ul>				
7	<p><b>2. Gunapadam - Padanangal (Mineral salts)</b></p> <ul style="list-style-type: none"> <li>• 2.1. Anjanakal (Antimony sulphide)</li> <li>• 2.2. Ganthakam (Sulphur)</li> <li>• 2.3. Gowri pashanam (Yellow Oxide of arsenic)(Synthetic)</li> <li>• 2.4. Thalagam(Yellow Arsenic-Arsenic trisulphide)</li> <li>• 2.5. Kuthiraipal paadanam</li> <li>• 2.6. Manosilai(Realger)</li> <li>• 2.7. Mirudhar singhi( Lead ore )</li> <li>• 2.8. Vellaippashanam(White arsenic)</li> </ul>	2	17	6	5
8		2	19	8	6

	<p><b>3.Gunapadam - Karasaram (Salts and Alkalies)</b></p> <ul style="list-style-type: none"> <li>• 3.1. Applakkaram (Sodium carbonate impura)</li> <li>• 3.2. Induppu ( Sodium Chloride Impura) (RockSalt)</li> <li>• 3.3. Evatcharam ( Potassium Carbonate impure)</li> <li>• 3.4. Kadal nurai</li> <li>• 3.5. Kanavai odu(Cuttle fish bone)</li> <li>• 3.6. Kalluppu</li> <li>• 3.7. Kariuppu ( Sodium chloride)</li> <li>• 3.8. Seenakkaram(Alum - Aluminous Sulphate)</li> <li>• 3.9. Soodan (Camphor)</li> <li>• 3.10. Navachcharam (Ammonium chloridum)</li> <li>• 3.11. Pachai karpooram (Borneo camphor)</li> <li>• 3.12. Pidalavanam (Black salt)</li> <li>• 3.13. Pooneeru( Fuller's earth)</li> <li>• 3.14. Ambar( Ambra arasea)</li> <li>• 3.15. Vengaram ( Sodium biborate)</li> <li>• 3.16. Vediuppu(Potassium nitrate )</li> </ul>				
9	<p><b>4.Gunapadam - Uparasam (Mineral Substances)</b></p> <ul style="list-style-type: none"> <li>• 4.1. Abragam ( Mica)</li> <li>• 4.2. Annabedhi- (Ferrous Sulphate -Green vitriol)</li> <li>• 4.3. Karpoorasilasathu(Gypsum)</li> <li>• 4.4. Karudakal</li> <li>• 4.5. Kalnar(Asbestos)</li> <li>• 4.6. Kalmatham</li> <li>• 4.7 Karchunnam (Lime stone)</li> <li>• 4.8. Kadikkaram (Silver nitrate)</li> <li>• 4.9. Kavikkal (Red ochre)</li> <li>• 4.10. Gomuthra silasathu(Asphaltum)</li> <li>• 4.11. Saaththirabedhi</li> <li>• 4.12. Thurusu(Cupric sulphate- Blue vitriol)</li> <li>• 4.13. Nandukkal ( Fossil stone crab)</li> <li>• 4.14. Palthutham (Zinc sulphate)</li> </ul>	2	18	7	5
10	<p><b>5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems)</b></p> <ul style="list-style-type: none"> <li>• A. 5.1. Attai( Hirudo medicinalis)</li> <li>• 5.2. Aami (Chelonia turtle)</li> <li>• 5.3. Intrakopa poochi(Mutilla Occidentalis)</li> </ul>	3	22	14	8

	<ul style="list-style-type: none"> <li>• 5.4. Iragugal (Feathers)</li> <li>• 5.5. Elumbugal (Bones)</li> <li>• 5.6. Onan (Calotis)</li> <li>• 5.7. Kasthuri ( Moschus moschiferus-Musk)</li> <li>• 5.8. Kilinjal(Common oyster shell)</li> <li>• 5.9. Kulavikkoondu (Wasp nest)</li> <li>• 5.9. Kombarakku (Carteria lacca)</li> <li>• 5.10. Kombukal(Horns)</li> <li>• 5.11. Korochanam (Fel borinum purifactum)</li> <li>• 5.12. Kozhi (Gallus domesticus)</li> <li>• 5.13. Sangu (Turbinellarape)</li> <li>• 5.14. Chanam (Dung)</li> <li>• 5.15. Siruneer (Urine)</li> <li>• 5.16 Thean (Honey)</li> <li>• 5.17. Nandu (Crab)</li> <li>• 5.18. Nathai (Fresh water snail)</li> <li>• 5.19. Palagarai ( Cypraea moneta)</li> <li>• 5.20. Paalum paal porutkalum (Milk and milk products)</li> <li>• 5.21. Pitchi(Bile)</li> <li>• 5.22. Punugu (Viverra civetta)</li> <li>• 5.23. Poonagam( Earth worm)</li> <li>• 5.24. Muttai oodugal ( Egg shells)</li> <li>• 5.25. Muthuchippi(Pearl oyster shell)</li> <li>• 5.26. Mezhugu (Wax)</li> <li>• <b>5. B. Navamanigal-Gems</b></li> <li>• 5.1. Pavalam</li> <li>• 5.2. Muthu</li> </ul>				
<b>Total Marks</b>			<b>100</b>	<b>50 hr</b>	<b>33 hr</b>



**Table 3: Learning objectives (Theory) of Course**

<b>Paper 1</b>									
<b>A3 Course outcome</b>	<b>B3 Learning Objective (At the end of the session, the students should be able to)</b>	<b>C3 Dom ain/s ub</b>	<b>D3 Must to know / desirable to know / Nice to know</b>	<b>E3 Level Does/ Show s how/ Know ws how/ Know w</b>	<b>F3 T-L meth od</b>	<b>G3 Assessment (Refer abbr eviations)</b>	<b>H3 Form ative/ sum mative</b>	<b>I3 Term</b>	<b>J3 Integ ratio n</b>
<b>Topic 1</b>									
<b>1. Introduction to Marunthiyal and basic principles of Marunthiyal</b>									
<b>(Lecture :2 hours, Non lecture: 2 hours)</b>									
CO1	Describe Marunthiyal, Marunthu, Major sources of Medicine (Thaavaram, Thaathu, Sangamam)	CK	MK	KH	L,CB L		F&S	I	V- SATV
CO1	Describe the Suvai(Taste), Thanmai(Effects), Pirivu(Ultimate Taste), Seikaikal( Actions) Pothugunam(General characteristics) of Mooligaikal (Medicinal plants and Raw Drugs).	CK	MK	KH	L&G D		F&S	I	
CO1	Describe the best time to collect Medicinal plants to ensure maximum efficacy with respect to Time, Day, Stars, Lunar cycle and seasons.	CC	MK	KH	L,SD L		F&S	I	

CO1	Discover the importance of collecting roots in particular direction	CK	NK	K	L&G D	NFE	F&S	I	
CO1	Describe in brief about the plants termed Karpa mooligaigal, Attakarma mooligaikal and Natchathira mooligaikal.	CK	NK	K	L&PP T,RL E		F&S	I	
CO1	Demonstrate the methodology of mooligaikalai karuppakuthal	AFT- VAL	NK	K	L_VC		F&S	I	
CO1	Discuss the relationship between plants as Sacred groves in Temples and the relationship between name of the plants with Deities.	AFT- RES	NK	K	FV		F&S	I	
CO1	Identify the various Pullurivi(curved mistletoe) and explain about pullurivi and its importance , clinical significance	CK	DK	KH	L_VC ,FV		F&S	I	

## Topic 2

### 2. Gunapadam - Mooligai Sedigal part - I (Herbs)

(Lecture :13 hours, Non lecture: 8 hours)

CO1,CO2	Describe Botanical name, Veru peyargal (Synonyms),Regional names, Parts used, Suvai(Taste), Thanmai(Effect), Pirivu(Ultimate Taste), Seikaigal(Actions), Pothugunam(General character) Suddhi (Purification) chemical constituents and formulations of the following herbs.	CK	MK	KH	L&PP T,L& GD,D G	WP,O-GAME	F&S	I	H-MT
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|---|--|--|--|--|--|--|--|--|--|
| 1. Agathi - <i>Sesbania grandiflora</i>                 |  |  |  |  |  |  |  |  |  |
| 2 Akkarakaram - <i>Anacyclus pyrethrum</i> ,            |  |  |  |  |  |  |  |  |  |
| 3. Athimathuram - <i>Glycyrrhiza glabra</i> ,           |  |  |  |  |  |  |  |  |  |
| 4 Athividayam - <i>Aconitum heterophyllum</i> ,         |  |  |  |  |  |  |  |  |  |
| 5 Abini & kasakasaa - <i>Papaver somniferum</i> ,       |  |  |  |  |  |  |  |  |  |
| 6. Ammaan patcharisi - <i>Euphorbia hirta</i> ,         |  |  |  |  |  |  |  |  |  |
| 7. Araththai - <i>Alpinia galanga</i>                   |  |  |  |  |  |  |  |  |  |
| 8. Alisivithai - <i>Lepidium Sativum</i> ,              |  |  |  |  |  |  |  |  |  |
| 9. Avuri - <i>Indigofera tinctoria</i> ,                |  |  |  |  |  |  |  |  |  |
| 10. Arukampul - <i>Cynodon dactylon</i> ,               |  |  |  |  |  |  |  |  |  |
| 11. Adutheendapalai - <i>Aristolochia bracteolata</i> , |  |  |  |  |  |  |  |  |  |

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| 12. Inji - Zingiber officinale,                  |  |  |  |  |  |  |  |  |  |
| 13. Impooral – Oldenlandia umbellate             |  |  |  |  |  |  |  |  |  |
| 14. Umaththai – Datura metal and its types,      |  |  |  |  |  |  |  |  |  |
| 15. Elam – Elettaria cardamomum and its types ,  |  |  |  |  |  |  |  |  |  |
| 16. Omam, – Trachyspermum ammi,                  |  |  |  |  |  |  |  |  |  |
| Krosani omam – Hyoscyamus niger,                 |  |  |  |  |  |  |  |  |  |
| 17. Orithazhtamarai - Hybanthus enneaspermus, ,  |  |  |  |  |  |  |  |  |  |
| 18. Kanja - Cannabis sativa, ,                   |  |  |  |  |  |  |  |  |  |
| 19. Kantankattari - Solanum surattense,          |  |  |  |  |  |  |  |  |  |
| 20. Kanduparanki - Clerodendrum serratum         |  |  |  |  |  |  |  |  |  |
| 21. Karanthai and its types. Spaeranthus indicus |  |  |  |  |  |  |  |  |  |

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| 22. Karisalankanni - <i>Eclipta prostrata</i> ,                                    |  |  |  |  |  |  |  |  |  |
| 23. Karpooravalli – <i>Anisochilus carnosus</i> ,                                  |  |  |  |  |  |  |  |  |  |
| 24. Kala-Carrisa <i>carandas</i> .   |  |  |  |  |  |  |  |  |  |
| 25. Kattrazhai – <i>Aloe barbadensis</i> , Kariyabolam- <i>Aloe littoralis</i> , . |  |  |  |  |  |  |  |  |  |
| 26. Karpokarisi – <i>Psoralea corylifolia</i>                                      |  |  |  |  |  |  |  |  |  |
| 27. Kitchilikizhangu - <i>Curcuma zedoaria</i> .                                   |  |  |  |  |  |  |  |  |  |
| 28. Keraikal ( <i>Arai Marselia quadrifolia</i> ,                                  |  |  |  |  |  |  |  |  |  |
| Puliarai- <i>Oxalis corniculata</i> ,  |  |  |  |  |  |  |  |  |  |
| Manali- <i>Gisekia pharanaceoides</i>  |  |  |  |  |  |  |  |  |  |
| , Puthina- <i>Mentha arvensis</i> )  |  |  |  |  |  |  |  |  |  |
| 29. Keezhanelli, senkizhanelli – <i>Phyllanthus amarus</i> ,                       |  |  |  |  |  |  |  |  |  |

30. Kunkumapoo – *Crocus sativus*,

31. Kupaimaeni – *Acalypha indica*,

32. Kuruver-*Vetiveria zizaniodes*

33. Kodiveli-*Plumbago indica*,

34. Kothumalli - *Coriandrum sativum*,

35. Kottam- *Costus speciosus*

36. Korai-*Cyperus rotundus*,

37. Jadamansi-*Nardostachys grandiflora*

38. Chathakuppai-*Anethum graveolens*

39. Charanai-*Trianthema portulacastrum*,

40. Sivathai-*Operculina turpethum* ,

	41.Shivanar vembu- Indigofera aspalathoides, 42.Chitramutti - Pavonia zeylanica								
CO1,CO2	Recite Podhuguna paadal of the concerned herb and list its common and therapeutic uses.	CC	MK	KH	REC		F&S	I	
CO1,CO2,CO5	Apply the knowledge of Suvai(Taste), Thanmai(Effect),Pirivu(Ultimate taste),Seikai(Action), and Podhugunam(General characteristics) of the concerned herb in the selection of medicine.	CAP	MK	KH	L&G D,CB L		F&S	I	V-UT
CO8	Explain the Mooligai(plant) with pothugunapadal and recent research updates.	CK	MK	KH	ACT		F&S	I	
CO1,CO2	Describe Botanical name, Veru peyargal (Synonyms),Regional names, Parts used,Suvai(Taste), Thanmai(Effect),Pirivu(Ultimate taste),Seikai(Action), Podhugunam(General characteristics),Suddhi (Purification) chemical constituents and formulations of the following herbs  1.Isappukolvidhai - Plantago ovata	CK	MK	KH	L,L_ VC	WP,O-GAME	F&S	I	H-MT

	2.Rudra jadai- <i>Ocimum basilicum</i> ,								
	3.Uzhundu - <i>Vigna mungo</i>								
	4.Ellu - <i>Sesamum indicum</i>								
	5.Kadugu- <i>Brassica juncea</i>								
	6.Kadugurokani - <i>Picrorhiza scrophulariiflora</i>								
	7.Karumbu- <i>Saccharum Officinarum</i>								
	8.Kanchori - <i>Tragia involucrate</i>								
	9.Kattathi- <i>Bauhinia tomentosa</i>								
	10.Kudiyottupoondtu- <i>Argemone mexicana</i>								
CO5,CO8	Discuss the common and therapeutic uses of concerned plants based on siddha literature and recent research updates.	CK	DK	KH			F	I	
CO5,CO8,CO9		CK	NK	KH	L&G D	DEB	F	I	



	<p>Enlist the therapeutic usage of following plants based on siddha literature and recent research updates.</p> <p>1.Orilai tamarai-Nervilia aragoana</p> <p>2.Kadalai-Cicer aritienum</p> <p>3.Karai-Catunaregum spinosa</p>								
CO1,CO2	<p>Describe the plants used as Karpa mooligaigal e.g</p> <p>1.Ealem, 2..Inji, 3.Karisalai, 4.Keelanelli, 5.korai and share a list of plants that are considered to possess antioxidant activity and discuss the pharmacological activity with respect to Siddha and research literatures.</p>	AFT-REC	MK	KH	L		F&S	I	
CO1,CO2	<p>Describe and share a list of mooligaigal(plants) that are commercially used in the preparation of hair oil and discuss the use of Jadamanjil and Karisalai in traditionally prepared oils</p>	CC	MK	KH	SDL, TUT		F	I	
CO1,CO2	<p>Describe a list of medically significant nuts and oil seeds like alisi vithai and aali vithai.</p>	AFT-REC	DK	KH	L&G D		F	I	

**Topic 3****3.Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)****(Lecture :20 hours, Non lecture: 13 hours)**

CO1,CO2		CAP	MK	KH	L&G D,L_ VC,D G	M-POS	F&S	II	
	<p>Describe Botanical name. Verupeyargal (Synonyms). Regional names. Parts used. Types. Organoleptic characters. Suvai(Taste), Thanmai(Effect),Pirivu(Ultimate taste),Seikai(Action), and Podhugunam(General characteristics) Suddhi (Purification) Chemical constituents and Name of the formulations pertaining to the following Trees and Shrubs.</p> <p><b>TREES</b></p> <p>1. Asogu - Saraca asoca</p> <p>2. Atthi - Ficus racemosa</p> <p>(Seemai Aththi – Ficus carica.</p> <p>Pei aththi – Ficus hispida)</p>								

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| 3. Arasu - <i>Ficus religiosa</i>  |  |  |  |  |  |  |  |  |  |
| 4. Azhinjil - <i>Alangium salvifolium</i>  |  |  |  |  |  |  |  |  |  |
| 5. Alamaram - <i>Ficus benghalensis</i>  |  |  |  |  |  |  |  |  |  |
| 6. Lavangam - <i>Syzygium aromaticum</i>   |  |  |  |  |  |  |  |  |  |
| 7. Lavangapattai - <i>Cinnamomum verum.</i>  |  |  |  |  |  |  |  |  |  |
| 8. Iluppai - <i>Madhuca longifolia.</i>  |  |  |  |  |  |  |  |  |  |
| 9. Ilaikalli - <i>Euphorbia ligularia.</i>   |  |  |  |  |  |  |  |  |  |
| 10. Etti – <i>Strychnos nux-vomica.</i>  |  |  |  |  |  |  |  |  |  |
| 11. Elumichai - <i>Citrus limon</i><br><br>( <i>Kadaranaraththai - Citrus medica.</i><br><br><i>Kichilipazham - Citrus aurantium).</i> |  |  |  |  |  |  |  |  |  |
| 12. Udimaram – <i>Lanea coromandelica.</i>   |  |  |  |  |  |  |  |  |  |

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| 13. Kadukkai - Terminalia chebula.                 |  |  |  |  |  |  |  |  |  |
| 14. Kamuku. Kalippakku - Areca catechu.            |  |  |  |  |  |  |  |  |  |
| 15. Karungali - Acacia catechu.                    |  |  |  |  |  |  |  |  |  |
| 16. Karkadagasinghi - Rhus succedanea.             |  |  |  |  |  |  |  |  |  |
| 17. Kaliyanamurkku – Erythrine variegata           |  |  |  |  |  |  |  |  |  |
| 18. Kungiliam – Shorea robusta.                    |  |  |  |  |  |  |  |  |  |
| 19. Kunthrikkam- Boswellia serrata.                |  |  |  |  |  |  |  |  |  |
| 20. Kondrai - Cassia fistula and its types.        |  |  |  |  |  |  |  |  |  |
| 21. Senbagam - Michelia champaca.                  |  |  |  |  |  |  |  |  |  |
| 22. Chandanam - Santalum album.                    |  |  |  |  |  |  |  |  |  |
| 23. Jaathikaai. Jaathipathri – Myristica fragrans. |  |  |  |  |  |  |  |  |  |

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| 24. Sambirani - <i>Styrax benzoin</i> .  |  |  |  |  |  |  |  |  |  |
| 25. Sirunaagapoo – <i>Mesua nagassarium</i>                                    |  |  |  |  |  |  |  |  |  |
| 26. Serankottai – <i>Semecarpus anacardium</i> .                               |  |  |  |  |  |  |  |  |  |
| 27. Thalispatheri – <i>Abies spectabilis</i>                                   |  |  |  |  |  |  |  |  |  |
| 28. Thaantri – <i>Terminalia bellirica</i> .                                   |  |  |  |  |  |  |  |  |  |
| 29. Thengumaram - <i>Cocos nucifera</i> .                                      |  |  |  |  |  |  |  |  |  |
| 30. Thettran - <i>Strychnos potatorum</i> .                                    |  |  |  |  |  |  |  |  |  |
| 31. Naaval – <i>Syzygium cumini</i> .  |  |  |  |  |  |  |  |  |  |
| 32. Neeradimuthu – <i>Hydnocarpus laurifolia</i> .                             |  |  |  |  |  |  |  |  |  |
| 33. Nuna – <i>Morinda tinctoria</i> .  |  |  |  |  |  |  |  |  |  |
| 34. Nelli- <i>Phyllanthus emblica</i> . Arunelli – <i>Phyllanthus amarus</i> . |  |  |  |  |  |  |  |  |  |
| 35. Nervalam - <i>Croton tiglium</i> .   |  |  |  |  |  |  |  |  |  |

36. Palasu -*Butea monosperma*.

37. Paathiri – *Stereospermum colais*.

38. Palai – *Manilkara hexandra*.

(Ezhilaipaalai – *Alstonia scholaris*.

Vetpalai – *Wrightia tinctoria*.

Kudsapaalai- *Holarrhena pubescens*.

Theempalai – *Wattakaka volubilis*)

39. Pungu – *Pongamia pinnata*.

Manipungu - *Sapindus laurifolia*.

40. Poovarasu - *Thespesia populnea*.

41. Magizh - *Mimusops elengi*.

42. Maramanjai – *Coscinium fenestratum*.

43. Madanakamappu – *Cycas circinalis*.

44. Marakkurai – *Catunaregum spinosa*.

45. Maruthu - *Terminalia arjuna*.

46. Maasikkai – *Quercus infectoria*.

47. Maadhulai - *Punica granatum*.

48. Maavilangu - *Crataeva magna*.

49. Murungai – *Moringa oleifera*.

50. Vadhanarayan – *Delonix elata*.

51. Valuzhuvai – *Celastrus paniculatus*.

52. Vilvam - *Aegle marmelos*.

53. Vilamaram – *Limonia acidissima*.

54. Vellilothram - *Symplocos racemosa*.

55. Vembu – *Azadirachta indica*

#### SHRUBS

1. Amukkara – *Withania somnifera*.

2. Azhavanam - *Lawsonia inermis*.

3. Aadathodai - *Justicia adhatoda*.

4. Aamanakku – *Ricinus communis* and its types.

5. Aavarai - *Cassia auriculata*.

6. Isangu – *Clerodendrum inerme*.

7. Erukku – *Calotropis gigantea*.

8. Kadalazhinjil - *Salacia reticulata*.



	<p>9. Karivembu – <i>Murraya koenigii</i>.</p> <p>10. Chundai – <i>Solanum torvum</i>.</p> <p>11. Sembarathai - <i>Hibiscus rosa-sinensis</i>.</p> <p>12. Parangipattai - <i>Smilax china</i>.</p> <p>13. Thazhuthazhai – <i>Clerodendron phlomoidis</i>.</p> <p>14. Nanthiyavattam- <i>Tabernaemontana divaricata</i>.</p> <p>15. Notchi – <i>Vitex negundo</i>.</p> <p>16. Milakaranai - <i>Todalia asiatica</i></p>								
CO1,CO2	Recite Podhuguna paadal of the concerned herb and discuss its common and therapeutic uses.	CC	MK	KH	REC		F&S	II	
CO7,CO8	<b>Apply the knowledge of Suvai(Taste) Thanmai(Effect),Pirivu(Ultimate taste),and Podhugunam(General characteristics) of the concerned Plant in the selection of medicine.</b>	CAP	MK	KH	L&PP T,IBL	CL-PR	F&S	II	

CO5,CO8	Explain the plants with respect to Podhuguna paadal and recent research updates .	CAP	DK	KH	IBL,S DL,L S		F	II	
CO1,CO2	<p>Describe Botanical name, Verupeyargal (Synonyms), Regional names, Parts used, Types, Organoleptic characters, Suvai(Taste), Thanmai(Effect),Pirivu(Ultimate taste),Seikai(Action), and Podhugunam(General characteristics) , Suddhi (Purification), Chemical constituents and formulations of the Following Trees and Shrubs.</p> <p>TREES</p> <ol style="list-style-type: none"> <li>1. Usilamaram - Albizia odoratissima,</li> <li>2. Rudraksham - Elacocarpus sphaericus,</li> <li>3. Cheekai - Acacia sinuata,</li> <li>4. Thavasumurungai - Rungia parviflora,</li> <li>5. Devadaru – Cedrus deodara,</li> <li>6. Panai – Borassus flabellifer,</li> </ol>	CC	MK	KH	L&G D,L_ VC	QZ ,WP,M- CHT	F&S	II	

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| 7. Puli – <i>Tamarindus indica</i> ,          |  |  |  |  |  |  |  |  |  |
| 8. Mangusthan - <i>Garcinia mangostana</i> ,  |  |  |  |  |  |  |  |  |  |
| 9. Maa – <i>Mangifera indica</i> ,            |  |  |  |  |  |  |  |  |  |
| 10. Mungil – <i>Bambusa arundinacea</i> ,     |  |  |  |  |  |  |  |  |  |
| 11. Valampurikkai – <i>Helicteres isora</i> , |  |  |  |  |  |  |  |  |  |
| 12. Pidangunari – <i>Premna tomentosa</i>     |  |  |  |  |  |  |  |  |  |

SHRUBS

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| 1. Karunaithandu – <i>Amorphophallus paeoniifolius</i> , |  |  |  |  |  |  |  |  |  |
| 2. Kalli - <i>Euphorbia ligularia</i> and its types      |  |  |  |  |  |  |  |  |  |
| (Kodikalli - <i>Euphorbia antiquorum</i> ,               |  |  |  |  |  |  |  |  |  |
| Shadhurakalli - <i>Stapelia virgata</i> ,                |  |  |  |  |  |  |  |  |  |
| Kaali-mulayan – <i>Sarcosemma brevistigma</i> ),         |  |  |  |  |  |  |  |  |  |

	3. Thazhai- Pandanus odoratissimus								
CO2,CO8	Discuss the common and Therapeutic uses of concerned plants based on Pothugunam and recent research updates.	CC	MK	KH	L&PP T		F&S	II	
CO1,CO2	<p>Enlist the common and therapeutic uses of the following plants.</p> <p>TREES</p> <p>1.Eechu (Sitrechu - Phoenix sylvestris, Pereechu – Phonex dactilifera),</p> <p>2. Pala- Artocarpus heterophyllus,</p> <p>3. Vel - Acacia nilotica and its types (Velvel -Acacia leucophloea, Kudaivel - Acacia latronum, Pikkaruvel - Acacia farnesiana)</p>	CK	MK	K	SDL	M-POS	F	II	

	SHRUBS  1. Chembai – Sesbania sesban								
CO1,CO2	Describe the peculiar products of following herbs: Athi - Kallu Arasu - Pulluruvi Iluppai - Sarkkarai Sarakkonrai - Puli	CC	MK	KH	L,L&GD	WP	F&S	II	
CO1,CO2	Discuss the collection methods of following saththu,uppu and interpret with its therapeutic uses. Ettikkottai saththu Kadukkai saththu Karungali saththu Masikkai uppu	CC	MK	KH	L&PP T		F&S	II	H- GMK
CO1,CO2	Explain the procedure of collecting exudates and usefulness in fumigation and therapeutics. Kungiliyam Kunthirikkam Sambirani	CK	DK	KH	DIS		F	II	V- AM

	Valendirabolam								
CO1,CO2	<p>Differentiate the types of following plants and apply in therapeutics.</p> <ul style="list-style-type: none"> <li>• Kadukkai</li> <li>• Kalli</li> <li>• Kungilyam</li> <li>• Konrai</li> <li>• Palai</li> </ul>	CC	MK	KH	L&PP T		F&S	II	H-MT
CO1,CO2	<p>Distinguish the following identical drugs.</p> <ul style="list-style-type: none"> <li>• Kadukkai poo - Karkadagasingi</li> <li>• Kothumalli - Parthenium</li> <li>• Shanbagam - Sambangi</li> <li>• Puli - Kodampuli</li> </ul>	CAN	MK	KH	L_VC	M-CHT	F	II	
CO1,CO2	<p>Integrate the therapeutic role of Kundhirigam, Kungilyam, Vellilothiram and Saambirani in Fumigation therapy.</p>	AFT- SET	MK	KH	L&PP T,L& GD		F&S	II	

CO1,CO2	Explain about the tastes possessed by Kadukkai, karungali, Maavilingam and Vellilothiram.	AFT-SET	MK	KH	L&PP T		F&S	II	
CO1,CO2	Justify the usage of Neem leaves as "Natural Insect Repellent".	AFT-VAL	DK	KH	L		F	II	
<b>Topic 4</b> <b>4. Gunapadam - Mooligai Sedigal part - II (Herbs)</b> <b>(Lecture :10 hours, Non lecture: 7 hours)</b>									
CO1,CO2	Describe Botanical name, Veru peyargal (Synonyms),Regional names, Parts used, Suvai(Taste), Thanmai(Potency),Pirivu(Ultimate taste),Seikai(Action), and Podhugunam(General characteristics), Suddhi (Purification) and chemical constituents for the following plants.  1. Seerakam - Cuminum cyminum and Types  2. Sukku – Zingiber officinale ,  3. Cheruppadai - Mollugo lotoides  4. Thamarai - Nelumbo nucifera	CC	MK	KH	REC, DG		F&S	III	H-MT

5. Thaivaelai - *Gynandropis gynandra*

6. Thuthi - *Abutilon indicum*,

7. Thumbai - *Leucas aspera*,

8. Thulasi - *Ocimum sanctum* And Types,

9. Thuthuvelai - *Solanum trilobatum*,

10. Thottarsinugi - *Mimosa pudica*,

11. Naabi - *Aconitum ferox*,

12. Nayuruvi - *Achyranthes aspera*

13.. Nilavaambu - *Andrographis paniculata*,

14. Nilapanaikizhanku - *Curculiga orchoides*,

15. Nilavarai - *Cassia senna*,



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| 16. Nirmulli - <i>Hygrophila auriculata</i> ,  |  |  |  |  |  |  |  |  |  |
| 17. Nerunjil - <i>Tribulus terrestris</i> , Seppu Nerunjil – <i>Indigofera enneaphylla</i> , |  |  |  |  |  |  |  |  |  |
| 18. Paruththi – <i>Gossypium herbaceum</i> , Semparuththi – <i>Gossypium arboreum</i> ,      |  |  |  |  |  |  |  |  |  |
| 19. Parpadagam – <i>Hedyotis corymbosa</i> ,   |  |  |  |  |  |  |  |  |  |
| 20. Petharohini- <i>Coptis teeta</i> ,   |  |  |  |  |  |  |  |  |  |
| 21. Peelai – <i>Aerva lanata</i> ,   |  |  |  |  |  |  |  |  |  |
| 22. Perungayam - <i>Ferula asafoetida</i> , . Poduthalai - <i>Phylla nodiflora</i> ,         |  |  |  |  |  |  |  |  |  |
| 23. Ponnaganni – <i>Alternanthera sessilis</i> ,   |  |  |  |  |  |  |  |  |  |
| 24. Manjal – <i>Curcuma longa</i> ,  |  |  |  |  |  |  |  |  |  |
| 25. Manathakkali – <i>Solanum nigrum</i> ,   |  |  |  |  |  |  |  |  |  |

26., Manjiti- *Rubia cordifolia*

27. Maasipathi - *Artemisia nilagirica*,

28 Mookiratai - *Boerhavia diffusa*

29 Vasambu – *Acorus calamus*,

30. Vaividangam - *Embelia ribes*,

31. Vazhai- *Musa paradisiaca*,

32. Vilamichuver - *Plectranthus vettiveroides*,

33.. Vishnukranthi – *Evolvulus alsinoides*,

34. Venkayam - *Allium cepa*

Kattuvengayam - *Urgenia indica*,

35. Venthayam – *Trigonella foenum-graecum*

	36.Vellarugu - <i>Enicostemma axillare</i> ,  37.Velluli - <i>Allium sativum</i> ,  38. Vaelai – Naaikadugu - <i>Cleome viscosa</i>								
CO1,CO2	Recite Podhuguna paadal of the concerned herb and list its common and therapeutic uses.	CC	MK	KH	L&PP T		F&S	III	
CO1,CO2	<b>Apply the knowledge of</b> Suvai(Taste), Thanmai(Potency),Pirivu(Ultimate taste), and Podhugunam(General characteristics) of the concerned herb in the selection of medicine.	CAP	MK	KH	L&G D,RE C		F&S	III	
CO1,CO2,CO 8	Explain the plants based on siddha literature on recent research publications.	CC	MK	KH	L&PP T		F&S	III	
CO1,CO2	Describe Botanical name, Verupeyargal (Synonyms),Regional names, Parts used, Suvai(Taste), Thanmai(Potency),Pirivu(Ultimate taste),Seikai(Action), and Podhugunam(General characteristics),Suddhi (Purification) and	CC	MK	K	L&G D	WP,M-CHT	F&S	III	

	chemical constituents and formulations of the concerned herbs.								
	1.Naththaisoori - Spermaceoce hispida								
	2.Neichitti - Veronia cicerea								
	3. Pugaiyilai - Nicotiana tobacum								
	4. Malli - Jasminum grandiflorum								
	5. Masipathiri - Artemisia nilagrica								
	6 .Vandukolli - Cassia alata								
CO1,CO2,CO 8	Discuss the concerned plants based on siddha literature and recent research updates.	CC	DK	KH	L&G D		F&S	III	
CO1,CO2,CO 9	Enlist the therapeutic uses of the following herb based on siddha literatures and recent research updates  Pachilai.Garcinia xanthochymus	CK	NK	K	DIS,B S,SD L	PUZ,M-CHT	F	III	

CO1,CO2,CO8	Discuss some plants that resembles human organs used in the treatment of the concerned organ.	CK	NK	K	L&G D,SD L	M-CHT	F	III	
CO1,CO2	Describe the procedures how to take extract from the plant.  Seenthil - <i>Tinospora cordifolia</i>	AFT- REC	NK	K	L_VC ,DIS		F	III	
CO1,CO2	Explain the list of plants that are used in siddha nasiyam therapy and describe their mode of action	AFT- VAL	DK	KH	L_VC	P-VIVA	F	III	
CO1,CO2	Demonstration the preparation of karisalai kanmai and other such products	AFT- VAL	DK	KH	L_VC ,RLE		F	III	
CO1,CO2	Discuss some plants that are commonly used in siddha external therapy	AFT- RES	MK	KH	L&G D,DG		F	III	
<b>Topic 5</b>									
<b>Gunapadam - Mooligai Kodigal (Climbers &amp; Creepers)</b>									
<b>(Lecture :5 hours, Non lecture: 3 hours)</b>									
CO1,CO2	Describe Botanical name, Veru peyargal (Synonyms),Regional	CC	MK	KH	L&PP	CL-PR,WP	F&S	III	

names, Parts used, Suvai(Taste),  
Thanmai(Effect),Pirivu(Ultimate taste),Seikai(Action), and  
Podhugunam(General characteristics), Suddhi (Purification)  
Chemical constituents and formulations of the following herbs.

1. Avarai-Lablab purpureus,
2. Akasakarudan -Corallocarpus epigaeus,
3. Attuthumatti-Citrullus colocynthis,
4. Echuchuramooli - Aristolochia indica,
5. Uttamani- Pergularia daemia.
6. Uppilangodi-Mimosa paniculata.
7. Kallapai kizhangu- Gloriosa superba ,
8. Kaliyana poosanikai- Benincasa hispida,
9. Kazharchikodi- Caesalpinia bonduc,
10. Kakkanam- Clitoria ternatea,
11. Kakkaikolli - Anamirta cocculus,
12. Kurinjan - Gymnema sylvestre,
13. Kuntri - Abrus precatorius.
14. Kovai - Coccinia grandis.
15. Seenthil, - Tinospora cordifolia and Porseenthil,
16. Thaneervittan kizhanku - Asparagus racemosus,
17. Thippili, Thippliver - Piper longum.
18. Thirakshai - Vitis vinifera,
19. Nancharuppan - Tylophora indica,
20. Nannari - Hemidesmus indicus.
21. Neerbirahmi - Bacopa monnieri,
22. Pirandai-Cissus quadrangularis.
23. Poonaikali-Mucuna pruriens.
24. Milagu, Sevviam - Piper Nigrum.
25. Valmilagu - Piper cubeba.
26. Musumusukkai - Mukia maderaspatana,

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	27. Mudakattran - <i>Cardiospermum halicacabum</i> 28. Vallarai - <i>Centella asiatica</i> . 29. Vellarikai - <i>Cucumis sativus</i> . 30. Vetrilai - Piper betle.								
CO1,CO2	Recite Podhu guna paadal of the concerned herb and list its common and therapeutic uses.	CC	MK	KH			F&S	III	
CO1,CO2	Apply the knowledge of Suvai(Taste), Thanmai(Effect),Pirivu(Ultimate taste),and Podhugunam(General characteristics) of the concerned herb in the selection of medicine.	CK	MK	KH	L&PP T	PUZ	F&S	III	
CO1,CO2,CO8	Explain the plant with pothuguna padal and recent research updates.	CK	MK	KH	L&G D		F&S	III	
CO1,CO2,CO8	Enlist the therapeutic uses of following herbs based on siddha literature and recent research update. 1.Kovai - <i>Coccoloba grandis</i> 2.Paagal- <i>Momordica charantia</i>	CK	NK	K	PBL		F	III	

<b>Paper 2</b>									
<b>A3</b> Course outcome	<b>B3</b> Learning Objective (At the end of the session, the students should be able to)	<b>C3</b> Dom ain/s	<b>D3</b> Must to know /	<b>E3</b> Level Does/	<b>F3</b> T-L meth	<b>G3</b> Assessment (Refer abbr	<b>H3</b> Form ative/	<b>I3</b> Term	<b>J3</b> Integ ratio

		ub	desirable to know / Nice to know	Show how/ Knows how/ Know	od	eviations)	summativ e		n
<b>Topic 1</b>									
<ul style="list-style-type: none"> <li><b>1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</b></li> </ul>									
<b>(Lecture :15 hours, Non lecture: 9 hours)</b>									
CO1,CO3	Define Thathuporutkal and its general classification.	CK	MK	K	L_VC	WP	F&S	I	
CO1,CO3	Define the classification of Ulogangal, Panchabootha ulogankal and padanangal, karasaram, uparasam types according to various Siddhars.	CK	MK	KH	L&G D,LS	PA	F&S	I	
CO5	Describe the basics of medical geology and basics of mineral identification. Brief Geo – chemical & Zoological description of Thathu and Jeeva porutkal.	CK	MK	KH	L&PP T,L_VC	QZ	F	I	
CO1,CO3	Describe the verupeyarkal (synonyms), metal name, distribution, pothugunam(general properties), suvai(taste),veeriyam (potency), pirivu (division), varieties& identification, natpu charakku (agonist), pagai charakku (antagonist), various suddhi	CC	MK	KH	L&PP T	CL-PR	F&S	I	



	(purification) methods, thodam of Ayam.								
CO1,CO3	Enumerate the therapeutic action, medicinal use & name of the different formulations pertaining to Ayam .	CC	MK	KH	L&PP T,EC E		F&S	I	
CO1,CO3,CO9	Explain the verses “Ilaithavar irumbai unna vaendum”.	CC	MK	KH	L&G D		F&S	I	
CO1,CO3	Describe Hematite with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, fracture and medicinal uses.	CC	MK	KH	L&G D,TU T		F&S	I	
CO1,CO3	Discuss the various collection methods of Iron for its best therapeutic effects.	CC	NK	KH	L&G D,L_ VC		F	I	
CO1,CO3	Analyse about Ayanagam and its clinical importance.	CK	DK	KH	L&G D,FC, TUT		F	I	
CO1,CO3,CO9	Explain the verses “Irumbilae pirantha naagam Elumbilae pirantha rogam” –Agathiyar karisal.	CC	DK	KH	L&G D	NFE	F	I	
CO1,CO3	Define Amirtha karanam.	CK	MK	KH	L&PP T,L& GD		F&S	I	
CO1,CO3	Describe the verupeyarkal (synonyms), metal name, Distribution, pothugunam (general properties), suvai (taste), veeriyam (potency), varieties & identification, suddhi (purification) of Ekku	CC	MK	KH	L&PP T,L& GD	PRN	F&S	I	

CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of the different formulations pertaining to Ekku ( <i>Saerum Marunthukal</i> ).	CAP	MK	KH	L&G D		F&S	I	
CO1,CO3	Describe Siderite with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, diaphaneity, cleavage, fracture and medicinal uses	CC	MK	KH	L&G D,L_ VC		F&S	I	
CO1,CO3	Discuss the importance of steel in dentistry and other medical approaches.	CK	DK	KH	IBL,F C,SD L		F	I	
CO1,CO3	Describe the verupeyarkal (synonyms), metal name, vernacular name, identification, distribution, pothugunam (general properties), suvai (taste), veeriyam (potency), pirivu (division), varieties, natpu charakku (agonist), pagai charakku (antagonist), various methods of suddhi (purification) of Karuvangam (Lead), and herbs containing lead.	CC	MK	KH	L&PP T,DG	P-ID	F&S	I	
CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of different formulations pertaining to Karuvangam.	CK	MK	KH			F&S	I	
CO1,CO3	Describe Angelesite with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, diaphaneity, cleavage, fracture and medicinal uses.	CC	MK	KH	L_VC		F&S	I	
CO1,CO3,CO	Explain the verses "Vangam vaaithaal thangam	CC	MK	KH			F&S	I	

9	Vangam kettal bangam.”								
CO1,CO3	Describe the verupeyarkal (synonyms), metal name, varieties, distribution, pothugunam (general properties), suvai(Taste), veeriyam(potency), pirivu(Division), varieties, natpu charakku(agonist), pagai charakku(antagonist), suddhi(purification of Kaantham (Magnetic oxide)	CC	MK	KH	L&PP T,ML	P-ID	F&S	I	
CO1,CO3	Enumerate the Seikaigal(therapeutic action), medicinal uses & name of the different formulations pertaining to Kaantham.	CK	MK	KH			F&S	I	
CO1,CO3	Explain the verses 1.“Kaanthathin parpaththai kaana onna thamma neenthappa ippini neerai kadakalam” – thirumoolar kanmakaandam 1000 2.“Ezhu oosi pidi kaantham siranthathu” 3.“ Irumbinum Kaantham Menmai.”	CC	MK	KH	DIS		F&S	I	
CO1,CO3	Describe Magnetite with its geo name, chemical name, Iron percentage, oxygen percentage, formula, colour, lustre, streak ,hardness, diaphaneity, cleavage, fracture, tenacity, and medicinal uses.	CC	MK	KH	L_VC		F&S	I	
CO1,CO3	Demonstrate the different varieties of Kaantham .	PSY- GUD	DK	SH	L_VC ,ML	M-CHT	F	I	
CO1,CO3	Perform various test to identify the authenticity of Kaantham for	CAN	MK	KH	L&G		F	I	

	its medicinal uses .				D				
CO1,CO3	Describe the verupeyarkal (synonyms), metal name, identification, distribution, pothugunam(general properties), suvai(taste),veeriyam (potency), pirivu(division), varieties, natppu charakku(agonist),pagai charakku (antagonist) ,suddhi(purification) of sembu(copper),sembu sathu ulla mooligaikal.	CC	MK	KH	L&PP T,D	O-GAME	F&S	I	
CO1,CO3	Enumerate the therapeutic action,medicinal uses & name of the different formulations pertaining to Sembu(Copper)	CK	MK	KH	L&G D		F&S	I	
CO1,CO3	Describe Cuprous oxide with its geo name, chemical name, colour, lustre, streak, hardness, density, diaphaneity, cleavage, fracture, and medicinal uses.	CC	MK	KH	L_VC		F&S	I	
CO1,CO3	Discuss about the synonym “Kunmakaalan”.	CK	MK	SH	L		F&S	I	
CO1,CO3	Enumerate and explain the alloys of Sembu.	CK	MK	KH	L&PP T		F&S	I	
CO1,CO3	Demonstrate the extracting method of Sembu from earth worm, peacock feather, copper sulphate.	AFT- VAL	DK	KH	L_VC ,ML		F&S	I	
CO1,CO3,CO 9	Explain the verses 1.“Sembu adalai siva asthiramagum nambi eyivaarkal namanai velvaar” 2.“Narayana asthiram itharku naaneppogum”.	CC	MK	KH			F&S	I	

CO1,CO3	Describe the verupeyarkal (synonyms), metal name, identification, pothugunam(general properties), Suvai(taste), specific action, natpu charakku(agonist), pagai charakku(antagonist), suddhi(purification) of Nagam	CC	MK	KH	L&PP T,L& GD	P-ID	F&S	I	
CO1,CO3	Enumerate the therapeutic action,medicinal uses, & name of the different formulations pertaining to Nagam.	CC	MK	KH	L&PP T,EC E		F&S	I	
CO1,CO3	Describe Nagam with its geo name, chemical name, colour, lustre, streak, hardness, diaphaneity, cleavage, fracture and medicinal uses.	CC	DK	KH	L&PP T		F&S	I	
CO1,CO3,CO 9	Discuss the verses “Peelipei saakadam achchirum appandam Saala miguthu peyin”.	CC	NK	KH			F	I	
CO1,CO3	Discuss the pharmacological importance of Nagam (zinc)	CC	DK	KH	L&PP T,L& GD	NFE	F&S	I	
CO1,CO3	Describe the Verupeyarkal (Synonyms), metal name, Identification, Distribution, Varieties, Pothugunam(General Properties), Suvai (Taste), Veeriyam (Potency), Pirivu(Division), Natpu charakku (Agonist), Pagai charakku (Antagonist) , Suddhi (Purification) of Thangam.	CC	MK	KH	L&PP T,RL E	QZ	F&S	I	

CO1,CO3	Enumerate the therapeutic action, medicinal uses, & name of the different formulations pertaining of Thangam (Gold).	CC	MK	KH	L&PP T		F&S	I	
CO1,CO3	Describe Aurum with its geo name, colour, lustre, streak, hardness, cleavage, fracture and medicinal uses .	CC	MK	KH	L&G D,L_ VC		F&S	I	
CO1,CO3	Describe the verupeyarkal(synonyms), metal name, vernacular name, identification, distribution, varieties, pothugunam(general properties), suvai (taste), veeriyam (potency), pirivu (division), varieties, suddhi (purification) of mandooram.	CC	MK	KH	L&G D,D	PRN	F&S	I	
CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of different formulations pertaining of Mandooram.	CC	MK	KH	L&G D		F&S	I	
CO1,CO3	Describe the verupeyarkal (synonyms), metal name, identification, distribution, pothugunam (general properties), suvai (taste), veeriyam (potency), pirivu (division), varieties, suddhi (purification) of velvangam.	CC	MK	KH	L&PP T,L& GD,R LE	P-ID	F&S	I	
CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of the different formulations pertaining to Velvangam.	CC	MK	KH			F&S	I	
CO1,CO3,CO 9	Explain the verses “Sura muthala thulirku mudambu arannigar Velleya parpathlaey.	CC	DK	KH			F&S	I	

CO1,CO3	Describe Cassiterite with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, fracture, diaphaneity and medicinal uses.	CC	DK	KH	L&G D		F&S	I	
CO1,CO3	Describe the verupeyarkal (synonyms), metal name, identification, distribution, pothugunam (general properties), suvai(taste), veeriyam (potency), pirivu (division), varieties, suddhi (purification) of Velli.	CC	MK	KH	L&PP T,PE R		F&S	I	
CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of different formulations pertaining to Velli.	CK	MK	KH			F&S	I	
CO1,CO3	Describe Argentum with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, diaphaneity, cleavage, fracture and medicinal uses	CK	DK	KH			F&S	I	
CO1,CO3	Assemble and discuss about the adverse reactions of each metals.	CC	DK	KH	L_VC	M-POS	F&S	I	
CO1,CO3,CO 8	Discuss the clinical application and its recent research updates for each metals.	CC	DK	KH	IBL,F C		F	I	
CO1,CO3	Describe the history of the metallic ores.	CC	NK	K			F	I	
CO1,CO3	Describe the verupeyarkal (synonyms), origin,distribution,types,	CC	MK	KH	L&G	T-OBT,DEB	F&S	I	

	<p>suvai (taste), veeriyam (potency), pirivu (division), Varieties, Natpu charakku (Agonist), Pagai charakku (Antagonist) pothugunam((general properties), Peculiarities,suddhi (purification) ,Nargunam,theegunam thodangal, sattaikal, and magimai of Rasam.</p>				D,FC				
CO1,CO3	Describe Mercury with its chemical name, colour, lustre and medicinal uses.	CK	MK	KH	L&G D,FC		F&S	I	
CO1,CO3	Discuss the relationship between mercury with other metals.	CC	MK	KH	L_VC ,DIS		F&S	I	
CO1,CO3,CO 9	Explain the verses and define Chakkaravarthi. "Sarakkir kalanthidu seevan".	CC	MK	KH			F&S	I	
CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of the different formulations pertaining to Rasam.	CC	MK	KH	L&PP T,DIS	O-QZ	F&S	I	
CO1,CO3	Demonstrate the various separating methods of Rasam from its mercurial compounds(linga rasam, veera rasam).	CC	MK	SH	L&G D,D		F&S	I	
CO1,CO3	Describe the characteristic features, suddhi (purification), suvai (taste), veeriyam (potency), pirivu (division),Name of the different formulation pertaining to Rasa chenthooram.	CK	MK	KH	L,L& PPT		F&S	I	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, identification, distribution, pothugunam (general properties),	CC	MK	KH	L&PP T	QZ	F&S	I	



	veeriyam (potency), pirivu (division), varieties, suddhi (Purification) of Lingam .								
CO1,CO3	Enumerate the therapeutic action, dose, uses & name of the different formulations pertaining to Lingam	CC	MK	KH	L&PP T,EC E,RL E		F&S	I	
CO1,CO3	Describe Cinnabar with its geo chemical name, colour, lustre, streak, hardness, cleavage, fracture, diaphaneity, and medicinal uses	CC	MK	KH	L		F&S	I	
CO1,CO3	Explain the verses “Inguliga sarakondrae saraku elam irai aagum mega vagai vinaiku nama naana lingam “.	CC	MK	KH			F&S	I	
CO1,CO3	Describe the Verupeyarkal, Chemical name, pothugunam(general properties), suvai(taste),veeriyam (potency), pirivu(division), suddhi(purification), therapeutic action, uses, & name of the different formulations pertaining to Pooram .	CC	MK	KH	L_VC	PRN	F&S	I	
CO1,CO3	Discuss the clinical application and its recent research updates of pooram in Putru noi	CC	DK	KH	L&PP T		F	I	
CO1,CO3	Describe the chemical name,verupeyarkal (synonyms) , history of origin, pothugunam (general properties), suvai (taste),veeriyam (potency), pirivu (division), suddhi (purification), actions, therapeutic action, uses, & name of the different formulations pertaining to Veeram.	CK	MK	KH	L_VC ,EDU	P-ID	F&S	I	

CO1,CO3	Describe Hydragyrum perchloride with its geochemical name, chemical formula, colour, lustre, streak, hardness, cleavage, fracture, diaphaneity, and medicinal uses.	CC	MK	KH	L,L&PPT		F&S	I	
CO1,CO3,CO8	Discuss about the scientific approaches of Veeram in eye disease and other external therapies.	CC	NK	KH	IBL,T BL,T UT	NFE	F	I	
CO1,CO3	Discuss the natural and synthetic types of Veeram.	CC	DK	KH	L&PP T,L_ VC	M-CHT	F&S	I	
CO1,CO3	Discuss the origin of Thathuporutkal (Metalic Ores and Mercurial Compounds)- If available only.	CK	NK	KH	L,DIS		F	I	
CO5	Describe introduction of general pharmacology, history and source of drugs (Natural, Synthetic)	CC	MK	KH	L&PP T,DIS		F&S	I	
CO5	Describe drug delivery system.	CC	MK	KH	L&PP T		F&S	I	
CO5	Explain the route of drug administration, advantages, disadvantages and special drug delivery system.	CC	MK	KH	L&PP T,L_ VC,M L		F&S	I	
CO5	Define pharmacokinetics.	CC	MK	KH	L&PP T		F&S	I	

CO5	Describe absorption, bioavailability, biotransformation, prodrug and excretion of a drug.	CC	MK	KH	L&PP T	WP	F&S	I	
CO5	Define pharmacodynamics, drug receptors and its functions.	CC	MK	KH	L&PP T		F&S	I	
CO5	Define drug potency, drug efficacy, therapeutic index, drug synergism, antagonist and its types, factors that modify the drug effects	CC	MK	KH	L&PP T,FC		F&S	I	
CO5	Explain about Adverse Drug Reaction(ADR).	CC	MK	KH	L&PP T,EC E		F&S	I	H-SS M-&- NM

## Topic 2

### 2. Gunapadam - Padanangal (Mineral salts)

(Lecture :6 hours, Non lecture: 5 hours)

CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, Identification, distribution, varieties, pothugunam (general properties), suddhi (purification) of Anjanakal.	CC	MK	KH	L&PP T,L& GD	P-ID	F&S	II	
CO1,CO3	Enumerate the therapeutic action, dose, medicinal Uses, name of the different formulations pertaining to Anjanakal and its Geological description.	CK	MK	KH			F&S	II	
CO1,CO3	Interpret the preparation of mai using Anjanakal and state the	CC	DK	KH	KL,L	SA	F&S	II	

	maintenance of eye hygiene.				S				
CO1,CO3	Demonstrate about Anjanakal.	CC	MK	KH		M-CHT	F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, identification, distribution, pothugunam (general properties), suvai (taste), varieties, various methods of suddhi (purification) of Gandhagam.	CC	MK	KH	L_VC ,ECE, ACT	P-ID	F&S	II	
CO1,CO3	Enumerate the therapeutic action, dose, uses, & names of different formulation pertaining to Gandhagam.	CK	MK	KH			F&S	II	
CO1,CO3	Describe about the special features of Gandhagam.	CC	MK	KH			F&S	II	
CO1,CO3	Explain the verses "Naadiyae brahma sathiriyano du nalla vaisiya soothiranam naalu saathi".	CAN	MK	KH			F&S	II	
CO1,CO3	Enumerate the chemical name, compound, colour, streak, cleavage, hardness, lustre, diaphaneity and medicinal uses of Sulphur.	CK	MK	KH			F&S	II	
CO1,CO3	Discuss the pharmacological importance and its adverse drug	CC	DK	KH	L_VC		F	II	H-SS

	effects of Gandhagam.				,RLE				M-&-NM
CO1,CO3	Identify the various forms of Gandhagam and its importances.	AFT-REC	DK	KH	L&PP T		F	II	
CO1,CO3,CO 9	Explain the verses  1.“Ghanthi athu sunnam aanal soothanthan udane kattum”  2.“Rasam vital vaatham pochu kanthi vital varnam pochu”  3.“Uppanganthiyathu thiravagathirku aathi”  4.“Uthamanae saranaikum uthavum paarae”.  5.“Maathar magavai valrpathu pol udambai yatharavaagai thettru yakkaiyinaal meethaga meviya adarnoyin veppathai maatruthallal deviyura menbathudal ther”.	CC	MK	KH	L&PP T	DEB	F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, identification, pothugunam (general properties),various suddhi (purification) methods of Gowri.	CK	MK	K	L&PP T	QZ	F&S	II	
CO1,CO3	Enumerate the therapeutic action, uses, & name of the different formulations pertaining to Gowri.	CK	MK	KH			F&S	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, vernacular names, distribution, identification, pothugunam	CC	MK	KH	L_VC ,FC	CL-PR	F&S	II	

	(general properties) , varieties, various suddhi (purification) methods of Thalagam								
CO1,CO3	Enumerate the therapeutic action, dose, uses & name of the different formulations pertaining to thalagam	CK	MK	KH			F&S	II	
CO1,CO3	Describe Orpiment with its geo name,chemical name, formula, colour, streak, cleavage, hardness, density, daphaneity and medicinal uses.	CK	MK	K			F&S	II	
CO1,CO3	<b>Discuss the varieties of Thalagam</b>	AFT-RES	NK	KH	L&PP T,L_ VC		F&S	II	
CO1,CO3	Discuss the role of thalagam (yellow arsenic) in cosmetology.	CC	NK	KH	ECE		F	II	
CO1,CO3	Describe the distribution, Origin,verupeyargal (synonyms), identification, suddhi (purification), varieties of Kuthiraipal paadanam.	CC	MK	KH	L&PP T	PUZ	F&S	II	
CO1,CO3	Enumerate the therapeutic action, dose, uses & name of the different formulations pertaining to Kuthiraipal paadanam	CK	MK	KH	L&PP T		F&S	II	
CO1,CO3	Describe Orthoclase with its geo name, chemical name, formula, colour, streak, ceavage, hardness, density, diaphaneity ,lustre, and medicinal uses.	CC	MK	KH	L&PP T		F&S	II	

CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, distribution, varieties, pothugunam (general properties), various suddhi (purification) methods of Manosilai.	CK	MK	K	L&PP T,L_ VC	P-EXAM	F&S	II	
CO1,CO3	Enumerate the therapeutic action, uses & name of the different formulations pertaining to Manosilai.	CK	MK	KH			F&S	II	
CO1,CO3	Describe about Realgar with its geo name, chemical name, formula, colour, streak, cleavage, fracture, hardness, density and medicinal uses.	CC	MK	KH	L&PP T		F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, Origin,general charaters,varities, pothugunam (general properties), suddhi murai (purification) of Mirutharsingi.	CC	MK	KH	L&PP T	QZ	F&S	II	
CO1,CO3	Enumerate the therapeutic action, uses & name of the different formulations pertaining to Mirutharsingi	CK	MK	KH			F&S	II	
CO1,CO3	Describe Massicot with its geo name, chemical name, colour, lustre, hardness and medicinal uses.	CC	MK	KH	L&PP T		F&S	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, distribution, pothugunam (general properties), various suddhi (purification) methods of Vellai Paasaanam.	CC	MK	KH	L&PP T	PUZ	F&S	II	

CO1,CO3	List out the therapeutic action, uses & name of the different formulations pertaining to Vellai paasanam.	CC	MK	KH			F&S	II	
CO1,CO3	Describe the Arsenium acidum with its geo name, chemical name, colour, streak, cleavage, fracture, hardness and medicinal uses.	CC	MK	KH	L		F&S	II	
CO1,CO3,CO8	Discuss the scientific approach and recent research updates of Thalagam, Gandhagam, Manosilai, Mirutharsingi.	CC	DK	KH	DIS,T PW		F&S	II	
CO1,CO3	Discuss the origin of Padanangal(Mineral Salts)- If available only.	CK	NK	KH	L,DIS		F	II	
<p><b>Topic 3</b></p> <p><b>3.Gunapadam - Karasaram (Salts and Alkalies)</b></p> <p><b>(Lecture :8 hours, Non lecture: 6 hours)</b></p>									
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, distribution, Collection method, pothugunam (general properties) and actions of Appalakaram.	CC	MK	KH	L&PP T,L_ VC	QZ	F&S	II	
CO1,CO3	Interpret the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Appalakaram.	CC	MK	KH	L&PP T		F&S	II	



CO1,CO3	Describe Nahcolite with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, fracture and medicinal uses.	CC	MK	K	L&PP T	M-CHT	F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, identification, distribution, pothugunam (general properties), actions and suddhi (purification) of Indhuppu (sodium chloride impure).	CC	MK	KH	L	PRN	F&S	II	
CO1,CO3	Interpret the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Indhuppu.	CC	MK	KH	L_VC	PRN	F&S	II	
CO1,CO3	Describe Sodium Chloride with its geo name, common name, chemical name, chemical formula, cleavage, colour, lustre, streak, hardness, diaphaneity, suvai (taste) and medicinal uses.	CC	DK	KH	L&PP T		F	II	
CO1,CO3	Discuss about the collection and purification methods of Indhuppu for commercial use.	AFT- RES	NK	KH	L,BL		F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, collection method, pothugunam (general properties), suddhi (purifications), actions of Evatcharam.	CC	MK	KH	L&PP T	QZ ,PUZ	F&S	II	

CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Evatcharam.	CK	MK	KH	L		F&S	II	
CO1,CO3	Discuss about Thirisaram and its medicinal uses.	AFT-RES	NK	KH	L&G D		F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), distribution,pothugunam(general properties) varieties, and therapeutic uses of Kadal nurai.	CC	MK	KH	L&PP T	PRN	F&S	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical name, identification, distribution, pothugunam (general properties), of Kanavai odu.	CC	MK	KH	L,L& PPT	CL-PR	F&S	II	
CO1,CO3	Enumerate the therapeutic actions, dose, uses & name of the different formulations pertaining to Kanavai odu.	CK	MK	KH	L		F&S	II	
CO1,CO3	Demonstrate the separation of kanavai odu.	PSY- MEC	NK	SH	L_VC		F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), identification, suvai(taste), distribution(characteristic features), pothugunam (general properties) and suddhi (purifications) of Kalluppu.	CC	MK	KH	L&PP T	CL-PR	F&S	II	

CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of the different formulations pertaining to kalluppu.	CK	MK	KH	L&PP T,L_ VC		F&S	II	
CO1,CO3	Illustrate the collection methods of kalluppu	CC	DK	SH	L_VC	P-PRF	F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical names, suvai (taste), physical properties, identification, distribution, pothugunam (general properties), actions and suddhi (purifications) of Kariuppu.	CK	MK	K	L,L& PPT	QZ	F&S	II	
CO1,CO3	Enumerate the therapeutic actions, dose, medicinal uses & name of the different formulations pertaining to Kariuppu.uppuneer gunam,samuthira neer gunam.	CK	MK	KH	L		F&S	II	
CO1,CO3	Discuss the reason for denoting Kariuppu parpam as "Noyaalikku Amutham,Vaidhiyanukku Vaal".	CC	MK	KH	L		F&S	II	
CO1,CO3	Demonstrate the preparation of Kariuppu.	PSY- MEC	DK	KH	L_VC ,FV	PUZ	F	II	
CO1,CO3	Analyze the richness of iodine in Kariuppu and commercial salt.	CAN	DK	KH	DIS,F C		F	II	
CO1,CO3	Describe the verupeyarkal (synonyms) , chemical names, suvai (taste), physical properties, identification, distribution,	CK	MK	K	L,L& PPT	QZ	F&S	II	

	pothugunam (general properties), actions and suddhi (purifications ) of Seenakaram.								
CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses ,name of the different formulations pertaining to Seenakaram and its geological description.	CK	MK	KH	L		F&S	II	
CO1,CO3	Differentiate the appearance of Seenakaram with other salts.	CC	DK	KH	DIS,R LE		F	II	
CO1,CO3	Discuss the synthetic preparation of potash alum.	CC	DK	KH	L&G D,BL		F&S	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical names, suvai (taste), physical properties, pothugunam ( general properties) and suddhi (purification) of Soodan.	CK	MK	K	L,L& PPT	DEB	F&S	II	
CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Soodan.	CK	MK	KH	L&PP T		F&S	II	
CO1,CO3,CO 9	Explain the verses 1. “Indhari kudari irikun sirparam” – theran karisal. 2. “Podithaan kathiron rirainetrip pugazhmup pazhaneerp Palingalaik”.	CC	MK	KH	L&G D		F&S	II	

CO1,CO3	Describe the verupeyarkal (synonyms) , chemical names, suvai(taste), physical properties, identification,distribution, pothugunam (general properties), actions and suddhi ( purifications ) of Navatcharam.	CK	MK	K	L&PP T,L_ VC	T-OBT,CL-PR	F&S	II	
CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Navatcharam.	CK	MK	KH	L		F&S	II	
CO1,CO3	Explain about the Aakiranam (Nasal application) and clinical uses and scientific approach of Navatchara aakiranam in various diseases.	CC	MK	KH			F&S	II	
CO1,CO3	Define “Jayaneerku Aathi” Navatcharam.	CK	DK	KH			F&S	II	
CO1,CO3	Discuss the role of Navaatcharam as first aid medicine.	AFT- RES	DK	KH	L		F	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical names, suvai (taste), physical properties, identification, distribution, pothugunam(general properties), actions and suddhi ( purifications ) of Pachai karpooram.	CK	MK	K	L,PE R	CL-PR	F&S	II	

CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Pachaikarpooram.	CK	MK	KH	L,L&PPT		F&S	II	
CO1,CO3,CO9	Explain the verses  “Kadi maalai soodi karpooram mukki...  thodai maalai menmulaiyar thodointhu mainthar”- Sithamani	CC	MK	KH			F&S	II	
CO1,CO3	Demonstrate the preparation methods of Borneo camphor from camphor tree.	CC	NK	KH	L_VC		F	II	
CO1,CO3	Differentiate Karpooram and Pachai karpooram.	PSY-GUD	DK	KH	L_VC	P-ID	F	II	
CO1,CO3	Observe the synthetic preparation of Karpooram and Pachai karpooram.	CC	DK	KH	L&PPT		F	II	
CO1,CO3	Describe the verupeyarkal (synonyms) , chemical names, pothugunam(general properties), actions and suddhi ( purification	CK	MK	K	L&PPT,EC	SA	F&S	II	

	) of Pidalavanam.				E				
CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Pidalavanam.	CK	MK	KH	L		F&S	II	
CO1,CO3	Describe the verupeyarkal (synonyms) , chemical names, physical properties, identification, distribution, and suddhi (purifications) of Pooneeru.	CK	MK	K	L&PP T,L_ VC,R P	CL-PR	F&S	II	
CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Pooneeru.	CK	MK	KH	L_VC		F&S	II	
CO1,CO3,CO 9	<p>Explain the verses</p> <p>1. “Utrupaar sivaniruntha boomithannil oru poondu mulaiyaathu uvaruppaalae attruppo maruthanila mayaanaruthan avanudanae sakthi adutha thirunthalalae”</p> <p>2. “Mannilezhu pirappagum Bhramakarpam villumae aathiyilae oilyumaachu venthazhala marupirappil neelamaachu” – Agathiyar paribhashai thirattu.</p> <p>3. “Thaale paar murai polum uppu polum thaan pooththu kondirukum kathir kaanum mun”- thiruvallur naayanar karpam 300.</p> <p>4. “Parhitta pooneetrin paruvangkelu panguniyum chithiravai kaasikkulae”.</p>	CK	MK	KH	L,DIS		F&S	II	

	5. “Pani peiyugkaalam paarungkaalar mannil pooneraap punithamaai pirakkum” .6. " Vaaththitavey veeramodu punugu seenam makkaley ivai moontru sunnaththaathi”..								
CO1,CO3	Describe Prissonite with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, fracture and medicinal uses.	CC	MK	KH	L		F&S	II	
CO1,CO3	Organize the programme of collecting pooneeru and make a documentation of its purification method.	PSY-GUD	MK	KH	DIS,P rBL	P-PRF	F	II	
CO1,CO3	Discuss about Pooneeru and its importance in making of alchemy (vatha muppu).	CC	DK	KH	L&PP T,L& GD,F C,TU T,FV		F	II	
CO1,CO3	Describe the chemical names identification, distribution, varieties, pothugunam(general properties) and actions of Ambar.	CC	MK	KH	L&PP T,L_ VC	CL-PR	F&S	II	
CO1,CO3	Explain the origin of Ambar according to Unani Vaithiyars.	CC	MK	KH			F&S	II	
CO1,CO3	Describe the characteristics and physical properties of Ambar.	CC	MK	KH	L&G D		F&S	II	



CO1,CO3	Enumerate the therapeutic uses & name of different formulations pertaining to Ambar.	CK	MK	KH	L_VC		F&S	II	
CO1,CO3	Discuss about testing methods of pure Ambar from commercially available adulterated Ambar.	CC	MK	KH			F&S	II	
CO1,CO3	Describe the verupeyarkal (synonyms) , chemical names, suvai (taste), physical properties, identification, distribution, pothugunam(general properties) actions and suddhi (purifications) of Venkaram	CC	MK	KH	L,PE R	PRN	F&S	II	
CO1,CO3	Enumerate the therapeutic actions, dose, medicinal uses & name of the different formulations pertaining to Venkaram.	CK	MK	KH			F&S	II	
CO1,CO3	Describe Boron trioxide with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, fracture and medicinal uses.	CC	MK	KH			F&S	II	
CO1,CO3	Demonstrate the difference between appearance of Venkaram and Similar salts.	PSY- MEC	DK	SH	DIS,D	WP	F	II	
CO1,CO3,CO 9	Discuss about the verses “venkaram veitheninum noi theerkum”.	CC	MK	KH			F&S	II	
CO1,CO3	Describe the verupeyarkal (synonyms), chemical names,physical properties, identification, distribution, pothugunam (general	CK	MK	K	L&PP T,L_	O-QZ	F&S	II	

	properties), actions and suddhi (purifications ) of Vediuppu.				VC				
CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Vediuppu.	CK	MK	KH	L_VC		F&S	II	
CO1,CO3,CO 9	Explain the verses “Moorkamulla ravi vindhu mathiyin vindhu moondu pangu mirandu pangumaaga kooti” “Vaathathirku Ver,kaai,illai,poo” “kambi kambi endrung karuvunda mangi nindra Kambi kambi yendru uraikung kaal”.	CC	NK	KH	L		F	II	
CO1,CO3	Discuss Salt peter with its geo name , chemical name, chemical formula, colour, lustre ,streak, hardness, fracture and medicinal uses.	CC	MK	KH			F&S	II	
CO1,CO3	Discuss about the historical uses of Vediuppu in various fields.	CC	DK	KH	PER		F	II	
CO1,CO3	Justify the difference between the Vediuppu and Venkaram.	PSY- SET	DK	SH	L_VC ,PrBL		F	II	
CO1,CO3,CO 8	Discuss the recent research updates of Pidalavanam,Vediuppu,Venkaaram,Seenakaaram,Kanavai odu.	CC	DK	KH	DIS		F	II	
CO1,CO3	Discuss the origin of Karasaram(Salt and Alkalies)- If available only.	CK	NK	KH	L&G D		F	II	

**Topic 4****4.Gunapadam - Uparasam (Mineral Substances)****(Lecture :7 hours, Non lecture: 5 hours)**

CO1,CO3	Describe the verupeyarkal (synonyms), origin,chemical name, various names in other Region, identification, distribution, pothugunam (general properties) and suddhi (purification) of Abragam.	CC	MK	KH	L&PP T,DIS	CL-PR	F&S	II	
CO1,CO3	Describe the varieties of abragam and its uses	CC	MK	KH	L_VC		F&S	II	
CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Abrugam.	CK	MK	KH	L&PP T		F&S	II	
CO1,CO3	Discuss the verses “abragam parpam tharumaiyaar aarivaar cheppu munney neerkattu theerumey”	CC	DK	KH			F&S	II	
CO1,CO3	Describe about mica and type its a geo name, chemical name, chemical formula, colour, lustre, streak, hardness, diaphaniety and medicinal uses.	CC	MK	K	L&PP T		F&S	II	
CO1,CO3	Observe the different varieties of abragam such as sivappu abragam, karuppu abaragam, yema abragam, naga abragam.	PSY- GUD	NK	SH	L_VC	M-CHT	F	II	

CO1,CO3	Discuss to prepare Abraga navaneetham as per various siddhars preparation methods	PSY-GUD	NK	KH	PT		F	II	
CO1,CO3	Describe the chemical name, verupeyargal (synonyms), identification, distribution, pothugunam(general properties), suvai(taste), veeriyam (potency), pirivu(division), varieties, suddhi(purification) of Annabedhi.	CC	MK	KH	L&PP T	CL-PR	F&S	II	
CO1,CO3	Describe the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Annabedhi and its geological description.	CC	MK	KH	L		F&S	II	
CO1,CO3	Enlist the precaution methods while using Annabedhi	CC	DK	KH	L		F&S	II	
CO1,CO3	Indicate the preference of Annabedhi instead of Ayam for anaemia in pregnancy	CC	DK	K	L		F	II	
CO1,CO3	Describe the verupeyarkal(synonyms), mineral name, origin, distribution, pothugunam(general properties), suddhi(purification) of Karpoora silasaththu	CC	MK	KH	L&PP T,L_ VC	QZ	F&S	I	

CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Karpoora silasaththu	CK	MK	KH	L_VC		F&S	II	
CO1,CO3	Discuss Gypsum with its geo name, chemical name, chemical formula, colour, lustre, streak, hardness, diaphaniety and medicinal uses.	CC	MK	KH	L&PP T		F&S	II	
CO1,CO3	Define the term “kallaga sathu”	CC	NK	KH	L,DIS		F	II	
CO1,CO3	Identify and discuss the various types of Karpoora silasathu	PSY- GUD	MK	KH	LS		F&S	II	
CO1,CO3	Describe the verupeyarkal(synonyms), mineral name, origin, distribution, pothugunam (general properties), suddhi(purification), name of the different formulations pertaining to karudakkal.	CC	MK	KH	L_VC ,ML	PRN	F&S	II	
CO1,CO3	Discuss about the magnesite with its geo name, chemical name, chemical formula, colour, lustre, streak, cleavage, hardness, diaphaniety, hardness and medicinal uses	CC	MK	KH			F&S	II	
CO1,CO3	Describe the chemical name, various names in other region, identification, varieties, distribution, pothugunam(general properties), suddhi(purification) of Kalnaar	CC	MK	KH	L&PP T,L& GD	QZ	F&S	II	

CO1,CO3	Enumerate the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Kalnaar	CK	MK	KH	L		F&S	II	
CO1,CO3	Discuss about the standardization procedure for the drug kalnaar before and after purification as per ASU protocol	CK	NK	KH	L_VC ,BL		F	II	
CO1,CO3	Observe the various type of kalnaar and its therapeutic uses.	PSY- GUD	NK	KH	L_VC ,PER		F	II	
CO1,CO3	Discuss about Actinolite & Tremolite with its of geo name, chemical name, chemical formula, colour, lustre, streak, hardness, varieties, diaphaneity, and medicinal uses respectively	CC	MK	KH			F&S	II	
CO1,CO3	Discuss the adverse drug reaction of asbestos in scientific approaches.	CC	DK	K	DIS		F	II	
CO1,CO3	Describe the verupeyarkal(synonyms), distribution, pothugunam(general properties), varieties, suddhi(purification), name of the different formulations pertaining to Kalmatham and its geological description.	CK	MK	K	L,L& PPT	QZ	F&S	II	
CO1,CO3	Describe chemical name, identification, distribution, pothugunam(general properties), suddhi(purification) of	CK	MK	K	L&PP T,L_	PRN	F&S	II	

	Karchunnambu				VC,P L				
CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of the different formulations pertaining to Karchunnambu	CK	MK	KH	L&PP T		F&S	II	
CO1,CO3	Observe the traditional method of preparing Karchunnambu	PSY- GUD	DK	SH	L_VC ,ML, W		F	II	
CO1,CO3	Describe the preparation, pothugunam(general properties) and actions of Kadikaram	CK	MK	K	L_VC		F&S	II	
CO1,CO3	Enumerate the therapeutic uses & name of the different formulations pertaining to Kadikaram and its geological description.	CK	MK	KH	L&PP T		F&S	II	
CO1,CO3	Discuss about the clinical application of Kadikara and its importance in prevention of eye diseases.	CC	DK	K	SDL		F	II	
CO1,CO3	Describe verupeyarkal (synonyms) ,chemical names, origin, suvai, physical properties, identification, distribution, pothugunam(general properties) actions and suddhi (purifications) of Kavikkal.	CK	MK	K	L&PP T	QZ	F&S	II	
CO1,CO3	Describe the therapeutic action, medicinal uses & name of the	CK	MK	KH	L		F&S	II	

	different formulations pertaining of Kavikkal								
CO1,CO3	Discuss about the Red ochre with its geo name, chemical name, chemical formula and medicinal uses	CC	MK	K	L&G D		F&S	II	
CO1,CO3,CO 8	Discuss about the various scientific research approach on Kavikkal	CK	MK	K	TPW		F	II	
CO1,CO3	Describe verupeyarkal (synonyms), chemical names, suvai (taste), veeriyam (potency), physical properties, identification, distribution, varieties, pothugunam(general properties), actions and suddhi (purifications) of Komuthra silasaththu.	CC	MK	KH	L&PP T	O-GAME	F&S	II	
CO1,CO3	Differentiate the properties between the original and adulterated Komuthra silasaththu	CK	MK	K	EDU, PER	P-ID	F&S	II	
CO1,CO3	Describe the therapeutic actions, medicinal uses, name of the formulations pertaining to Komuthra silasaththu.	CK	MK	KH	L		F&S	II	
CO1,CO3,CO 9	Discuss about the verses "Kurugipom muthira erivu"	CK	MK	K	L&G D		F&S	II	
CO1,CO3,CO	Discuss the clinical application and its recent research updates of	CC	DK	KH	L		F&S	II	



8	Komuthra silasaththu								
CO1,CO3	Describe the Verupeyarkal(Synonyms), Pothugunam (General Properties), Suddhi(Purification ),Name of the different formulation pertaining to Sathirabedhi,	CK	MK	KH	L&PP T	CL-PR	F&S	II	
CO1,CO3	Describe Ferrogenous with its geo name, Structure, Colour, Chemical composition, Medicinal uses	CK	MK	KH	L		F&S	II	
CO1,CO3	Describe verupeyarkal (synonyms), chemical names, physical properties, identification, pothugunam(general properties), actions, natpu charakku (agonist), pagai charakku (antagonist) and suddhi (purifications) of Thurusu.	CK	MK	K	L&PP T,L_ VC	PUZ	F&S	II	
CO1,CO3	Describe the therapeutic action, dose, medicinal uses & name of the different formulations pertaining to Thurusu,and its geological description.	CK	MK	KH	L_VC ,D_L		F&S	II	
CO1,CO3,CO 8	Discuss the clinical application of Thurusu in eye disease and its research updates	CC	DK	KH	L&G D,DIS		F&S	II	
CO1,CO3	Describe verupeyarkal (synonyms) , English names, physical properties, identification, ,distribution, pothugunam(general properties), actions and suddhi (purifications) of Nandukkal .	CK	MK	K	L,PE R	PRN	F&S	II	

CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of the different formulations pertaining to Nandukkal	CK	MK	KH	L&PP T		F&S	II	
CO1,CO3	Discuss and clarify the authenticity of Nandukkal available in markets .	CC	DK	KH	L&G D,D_ L		F	II	
CO1,CO3	Describe verupeyarkal (synonyms), physical properties, identification, pothugunam(general properties) , actions and suddhi (purifications) of Paalthutham	CC	MK	K	L&PP T,L_ VC	T-OBT,P-ID	F&S	II	
CO1,CO3	Enumerate the therapeutic action, medicinal uses & name of the different formulations pertaining to Paalthutham	CK	MK	KH			F&S	II	
CO1,CO3	Distinguish Paalthutham and Mayilthutham	CAN	MK	KH		P-ID	F&S	II	
CO1,CO3,CO 8	Discuss the clinical application and recent research updates of Atragam, Karpoora silasathu, Komuthira silasathu, Kavikal, Nandukkal, Paalthutham	CC	NK	K	DIS		F	II	
CO1,CO3	Organize and observe the collection of various type of ores	PSY- GUD	NK	K	FV		F	II	
CO1,CO3	Discuss the origin of Uparasam(Mineral Substance)- If available only.	CK	NK	KH	L&G D		F	II	

<b>Topic 5</b>									
<b>5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems)</b>									
<b>(Lecture :14 hours, Non lecture: 8 hours)</b>									
CO1,CO4	Describe the verupeyarkal (synonyms), zoological name, identification, vaazhidam (habitat) , pothugunam(general properties), varieties, suddhi(purification), action, therapeutic uses of Attai.	CC	MK	KH	L,L_ VC,M L	PUZ	F&S	III	
CO1,CO4	Observe and find out the first quality of leech among other types.	CAN	MK	SH			F	III	V- AM
CO1,CO4,CO 9	Discuss Amirthanilai and attai vidakoodatha idankalum and thithikalum.	CC	MK	KH			F&S	III	
CO1,CO4	Explain the Bioactive substance present in leech saliva and its recent research.	CAN	MK	KH	L_VC		F	III	
CO1,CO4	Discuss the clinical importance of leech therapy (hirudotherapy).	CC	MK	KH	PER		F	III	V- VPS
CO1,CO4,CO 9	Discuss the verses “ vitta vurunththanum visha vuruva yaanaikal vettuvuvuvai vingumathu vethanayam thittanch”– Agathiyar Nayana Vithi.	CC	MK	KH			F&S	III	

CO1,CO4	Describe the verupeyarkal (synonyms), Zoological name, types, vaazhidam (habitat), pothugunam, morphological characters, therapeutic uses of Aamai and suddhi(purification) of Aamai odu.	CC	MK	KH	L&G D	QZ	F&S	III	
CO1,CO4	Describe the zoological name, synonyms(veru peyargal), Veeriyam,types,distribution, morphological structure, types, artificial preparing method of Indrakopa poochi.	CK	MK	KH	L&PP T	PRN	F&S	III	
CO1,CO4,CO 9	Explain the verses “karumegam thathunattam kakkum kabam pokum.”	CC	MK	KH			F	III	
CO1,CO4	Describe Mayil Iragu, Suddhi (Purification) and its therapeutic uses.	CC	MK	KH	L&PP T,L_ VC		F&S	III	
CO1,CO4	Describe Perandam ,its suddhi (Purification) and therapeutic uses of Peranda Parpam	CK	MK	K	L,IBL		F&S	III	
CO1,CO4	Describe Onaan with its zoological name, therapeutic action, therapeutic uses, name of different formulations pertaining to Onaan	CK	MK	KH	L_VC ,BS	QZ	F&S	III	
CO1,CO4,CO 9	Explain the lines “Oonan neikku kaana piravalinoi kaanathu”	CC	MK	KH			F	III	
CO1,CO4	Explain about the zoological name, synonyms (veru peyargal), identification, properties, therapeutic action, medicinal uses,and name of different formulations pertaining to Kasturi and	CC	MK	KH	L&PP T,L_ VC	M-CHT	F&S	III	

	synthetic preparation of musk.								
CO1,CO4	Discuss about the verses “Kasturi karikai thilakai kulunthai kaiththapinda kainaayakai”	CC	MK	KH	L,DIS ,VIV A		F	III	
CO1,CO4	Discuss the testing methods to find out the natural kasthuri.	CC	MK	K	L_VC		F&S	III	
CO1,CO4	Discuss the substitute drugs for Kasturi.	CC	MK	SH	L&PP T,L& GD,L _VC		F	III	
CO1,CO4	Describe the zoological name, synonyms (veru peyargal) , vaazhidam (habitat) , varieties, suddhi (purification) of Kilinjal and its therapeutic uses.	CK	MK	KH	L,L& PPT	WP	F&S	III	
CO1,CO4	Observe the various types of Kilinjal and its therapeutic actions.	PSY- SET	DK	KH			F&S	III	
CO1,CO4	Discuss the clinical importance and recent research updates of Kasthuri and Kilinjal.	CC	MK	KH	ML		F	III	
CO1,CO4	Enumerate the therapeutic action, types, name of different formulations pertaining to Kulavikkoandu.	CK	MK	KH	L_VC ,FC	M-CHT	F&S	III	
CO1,CO4	Define the zoological name, physical characters ,suvai, actions ,veeriyam,pothugunam (general properties) and medicinal uses	CK	MK	K	L&PP T	P-ID	F&S	III	

	of Kombarakku.								
CO1,CO4	Observe the formation of Kombarakku	PSY-SET	MK	SH	L_VC, KL		F	III	
CO1,CO4	Describe Maan kombu (sirungi) , Veruperyargal, Action,Suddhi (Purification) and its therapeutic uses...	CK	MK	K	L&G D,FC, D		F&S	III	
CO1,CO4	Discuss the methods to identify the ideal Maan kombu used for therapeutic purpose.	CC	NK	K			F	III	
CO1,CO4	Describe the zoological description, synonyms (veru peyargal), pothugunam (general properties), Suvai(taste) Veeriyam(potency),vibhavam, various types and suddhi(purification), therapeutic action, dose, uses, name of different formulations pertaining to Korosanam.	CK	MK	K	L&G D,KL, RLE	QZ	F&S	III	
CO1,CO4	Describe the zoological description, synonyms (verupeyargal), pothugunam (general properties),therapeutic action, uses and different formulation pertaining to Kozhi	CK	MK	KH	L&PP T,BS	QZ	F&S	III	
CO1,CO4	Describe the zoological name, Description, synonyms (verupeyargal), varieties, pothugunam (general properties), suddhi (purification), therapeutic actions and medicinal uses of Sangu.	CC	MK	K	L_VC ,FC	T- EW	F&S	III	

CO1,CO4	Describe the synonyms (verupeyargal), pothugunam (general properties) and therapeutic uses of Saanam (cow dung).	CK	MK	K	L,RL E,RE C	CL-PR	F&S	III	
CO1,CO4	Describe the synonyms (verupeyargal), varieties, pothugunam (general properties) and therapeutic uses of Siruneer.	CK	MK	K	L&PP T	PRN	F&S	III	
CO1,CO4	Describe the origin, characters, suddhi (purifications), actions, types and therapeutic uses of Thaen.	CK	MK	K	L&G D,ML ,RLE	T- EW	F&S	III	
CO1,CO4	Illustrate the different regional honey by their color and medicinal uses.	CK	DK	KH			F&S	III	
CO1,CO4,CO 9	Explain the verses“Iravular amuthai iravulathaakum”.	CC	DK	KH			F&S	III	
CO1,CO4	Describe Apitherapy.	CK	NK	SH	L_VC		F	III	
CO1,CO4	Describe the zoological name, synonyms (verupeyargal), types of nandu, pothugunam(general characters)action, therapeutic uses, name of the different formulations pertaining of Nandu.	CK	MK	K	L_VC ,DIS	CL-PR	F	III	
CO1,CO4		CK	MK	K	L&PP T		F&S	III	

	Describe the synonyms (verupeyargal), pothugunam (general properties) and therapeutic uses of Naththai.								
CO1,CO4	Discuss about the folklore uses of Naththai.	CC	MK	SH	CBL, FC		F&S	III	
CO1,CO4	Describe the zoological name, synonyms (verupeyargal), varieties, pothugunam (general properties), suddhi(purification), therapeutic action, uses, and different formulation pertaining to palagarai.	CK	MK	KH	L_VC ,TUT	T- EW,WP	F&S	III	
CO1,CO4	Explain about Zoological description of palagarai	CC	MK	KH	BS	O-GAME	F&S	III	
CO1,CO4,CO 9	Explain the verses “ manniya kavadi sogi varadi enbathiaye palagarayin peyar”.	CC	MK	KH			F&S	III	
CO1,CO4,CO 8	Describe the clinical importance and recent research updates on Kombarakku, Korochanam,Sangu and Palagarai.	CK	MK	K	ACT		F&S	III	
CO1,CO4	Describe the zoological name, synonyms (verupeyargal), types, composition of Paalum Paal Porutkalum.	CK	MK	KH	L&G D,BS	DEB	F&S	III	
CO1,CO4,CO 8	Describe the byproducts of Paal (milk) such as Thayir,Mor,Vennai and Nei, it's therapeutic uses, different formulations,clinical application and recent research updates.	CK	MK	KH			F&S	III	



CO1,CO4	Demonstrate the preparation of Paal Parpam using root of <i>Abutilon indicum</i> .	PSY-GUD	MK	KH	L&G D,L_ VC	NFE	F&S	III	
CO1,CO4	Describe the synonyms (verupeyargal), various types, therapeutic uses of Pichchi.	CK	MK	KH	L,L_ VC		F&S	III	
CO1,CO4	Describe the zoological name, synonyms (verupeyargal), formation, available regions, suddhi (purification), pothugunam, therapeutic uses, different formulation pertaining to Punugu, Javathu and Punugu sattam.	CC	MK	KH	L&PP T	PUZ	F&S	III	
CO1,CO4,CO 9	Explain the verses “vurukinathirku aathi solven kaamodu javvathu saara moondrum”.	CC	MK	KH			F	III	
CO1,CO4	Describe the synonyms (verupeyargal), available regions and collection, pothugunam (general properties), suddhi (purification), therapeutic uses and different formulation pertaining to Poonagam.	CC	MK	KH	L&PP T,SY	CL-PR	F&S	III	
CO1,CO4,CO 8	Discuss about the clinical applications and recent research updates on Poonagam	CC	DK	KH			F&S	III	

CO1,CO4,CO9	Explain the verses “varumpuli mangisathaal maarum unmaanthe rogam”- Pathartha guna sinthamani.	CC	MK	KH			F&S	III	
CO1,CO4	Describe the types, suddhi and formulation of Muttai Odu (egg shell).	CC	MK	KH	L&G D		F&S	III	
CO1,CO4	Discuss about the clinical applications and recent research updates on Muthu chippi.	CK	MK	KH	L&G D,LS, RLE	QZ	F&S	III	
CO1,CO4	<b>Discuss about the clinical applications and recent research updates on Muthu chippi.</b>	CC	MK	KH	SDL		F&S	III	
CO1,CO4	Describe the english name, pothugunam (general properties), suddhi (purification), therapeutic uses and different formulation pertaining to Mezhugu (wax) .	CK	MK	KH	L&PP T,L& GD	WP	F&S	III	
CO1,CO4	Discuss about the chemical composition in various types of Mezhugu.	CC	MK	KH	L&PP T		F&S	III	
CO1,CO4	Observe and discuss the preparation of Mezhugu.	PSY- SET	MK	KH	L_VC ,FC		F&S	III	

CO1,CO4	Define Navamanikal ( nine precious stones) and its imporatance in siddha system of medicine	CK	MK	KH	L&PP T,FV	M-CHT	F&S	III	
CO1,CO4	Describe the historical importance of navamanigal, classification of navamanigal( gems), identification procedures,and its relationship between planets.	CC	MK	KH	L&PP T,TU T	M-POS	F&S	III	
CO1,CO3	Describe the suitable days ,colours, flowers, directions to worship the nine precious gems.	CC	MK	KH	L&PP T,BS	M-POS	F&S	I	
CO1,CO3	Illustrate the relationship between nine gems, planets, and human organs.	PSY- MEC	MK	SH		M-POS	F&S	III	
CO1,CO3	Describe the verupeyarkal (synonyms), zoological name, distribution, physical characters, pothugunam (general properties) and suddhi (purification) of Pavazham.	CK	MK	K	L&PP T,ML	PRN	F&S	III	
CO1,CO3	Describe the medicinal uses of Pavazham and name the formulation.	CC	MK	K			F&S	III	
CO1,CO3	Demonstrate about the type of pavazham.	PSY- GUD	MK	SH		SA	F&S	III	

CO1,CO3	Explain about line “vorkollai sangamolir pavazhamven mutha neerpadu muppinodu iinthu”.	CC	MK	KH			F&S	III	
CO1,CO3,CO 9	Explain the line “piravaala parpamathu pirathaanei natpaam” sindhoorathu paada adalai serkaaya vanmaiya undam sindhoorathu paada adalai seiyumuney” "Brahmapathiramum illampidiyum varchithamey"	CC	MK	KH			F&S	III	
CO1,CO3	Discuss about Coral reef ecosystem.	CC	MK	SH	L&PP T,L_ VC,D IS		F&S	III	
CO1,CO3	Describe the verupeyarkal (synonyms), origin,special characters (gunam & kutram), distribution, varieties, collection methods, pothugunam (general properties) of Muthu (pearl).	CK	MK	K	L&PP T,L_ VC	PRN,QZ	F&S	III	
CO1,CO3	Describe the testing method of original Muthu, it's suvai, suddhi (purification) ,therapeutic uses and glory of Muthu (pearl)	CC	MK	KH			F&S	III	
CO1,CO3	Demonstrate the collection of Muthu (pearl).	PSY- MEC	MK	SH	L_VC	SA	F&S	III	
CO1,CO3,CO 8	Discuss about the clinical application and its recent research updates of Muthu and Pavazham.	CC	DK	KH	TBL, FC	Portfolios	F&S	III	
CO1,CO3,CO	Discuss the origin of Jeevam(Animal kingdom) and	CK	NK	KH	L&G		F	III	

4	Navamanigal(Gems)- If available only.				D				
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**List of Practicals (Term and Hours)**

<b>PRACTICALS (Marks-100)</b>			
<b>S.No</b>	<b>List of Topics</b>	<b>Term</b>	<b>Hours</b>
1	Purification of following raw drugs- Mooligaikal(Plants)	1	6
2	Purification of following raw drugs- Thathu portukal(Metals,Minerals)	1	14
3	Purification of raw drugs-Jeevam(Animal origin)	1	4
4	Chemical analysis -Inorganic	1	3
5	Phytochemical analysis	1	5
6	Raw drug identification- Mooligaikal(Plants)	1	9
7	Raw drug identification- Thathu porutkal(Metals,Minerals)	1	4
8	Raw drug identification-Jeevam(Animal origin)	1	2

9	Purification of following raw drugs-Mooligaikal(Plants)	2	3
10	Purification of following raw drugs- Thathu porutkal(Metals,Minerals)	2	22
11	Purification of following raw drugs-Jeevam(Animal origin)	2	4
12	Chemical analysis-Inorganic	2	5
13	Phytochemical analysis	2	6
14	Raw drug identification-Mooligaikal(Plants)	2	12
15	Raw drug identification- Thathu porutkal(Metals,Minerals)	2	7
16	Raw drug identification-Jeevam(Animal origin)	2	2
17	Purification of raw drugs-Mooligaikal(Plants)	3	6

18	Purification of raw drugs-Thathu porutkal(Metals,Minerals)	3	14
19	Purification of raw drugs-Jeevam	3	4
20	Chemical analysis -Inorganic	3	3
21	Phytochemical analysis	3	5
22	Raw drug identification-Mooligaikal(Plants)	3	9
23	Raw drug identification- Thathu porutkal(Metals,Minerals)	3	4
24	Raw drug identification-Jeevam(Animal origin)	3	1



**Table 4: Learning objectives (Practical)**

A4 Course outcome	B4 Learning Objective (At the end of the session, the students should be able to)	C4 Dom ain/s ub	D4 Must to know / desirable to know / Nice to know	E4 Level Does/ Show s how/ Kno ws how/ Kno w	F4 T-L meth od	G4 Assessment (Refer abbr eviations)	H4 Form ative/ sum mative	I4 Term	K4 Integ ratio n
<p><b>Topic 1</b></p> <p><b>Purification of following raw drugs- Mooligaikal(Plants)</b></p>									
CO6,CO7	Describe the purification with the help of Aim, Requirements, Procedure, Result and therapeutic uses of following herb 1.Aatruthumati 2. Kariabolam 3.Kungilium	CC	MK	KH	L,DIS	P-PRF	F&S	I	
CO6,CO7	Demonstrate the purification procedure for following herbs 1.Aatruthumati 2.Kariabolam 3.Kungilium	PSY-GUD	MK	SH			F&S	I	
CO6,CO7	Intepret the Changes noted during the purification	CAP	MK	KH			F&S	I	

CO3,CO6	Justify the therapeutic importance of Aatruthumati in infertility, and interpret with its purification process	CK	MK	KH			F&S	I	
<b>Topic 2</b>									
<b>Purification of following raw drugs- Thathu portukal(Metals,Minerals)</b>									
CO6,CO7	Describe the purification with the help of Aim, requirements, Procedure, Result and therapeutic uses of following metals and minerals 1.Abraham 2.Annabedhi 3.Indhuppu 4. Rasam 5. Ganthagam-Method I(Gunapadam thathu jeeva vaguppu method 1 page no:305) 6.Ganthagam-Method II(Gunapadam thathu jeeva vaguppu method 2 page no:305) 7.Ganthagam- Method III(sarakku suthi sei muraikal Method 14 Page No:65)	CC	MK	KH	PT,D		F&S	I	
CO6,CO7	Demonstrate purification procedure for following metals and minerals 1.Abraham 2.Annabedhi 3. Indhuppu 4. Rasam	PSY-GUD	MK	SH			F&S	I	

	5. Ganthagam-Method I(Gunapadam thathu jeeva vaguppu method 1 page no:305) 6.Ganthagam-Method II(Gunapadam thathu jeeva vaguppu method 2 page no:305) 7.Ganthagam- Method III(sarakku suthi sei muraikal Method 14 Page No:65)								
CO6,CO7	Interpret the changes noted during the purification	CAP	MK	KH			F&S	I	
CO6,CO7	Explain the importance of Annabethi chendooram in the " Amma Sanjeevi kit " for Normal Delivery.	CK	MK	KH			F	I	
<b>Topic 3</b>									
<b>Purification of raw drugs-Jeevam(Animal origin)</b>									
CO6,CO7	Describe the purification with the help of Aim, requirements, Procedure, Result and therapeutic uses of following drugs - Animal origin 1. Kombarakku, 2. Sangu	CC	MK	KH	L&G D		F&S	I	
CO6,CO7	Demonstrate the purification procedure for the following drugs - Animal origin 1. Kombarakku, 2. Sangu	PSY- GUD	MK	SH			F&S	I	

CO6,CO7	Interpret the changes noted during the purification	CAP	MK	KH			F&S	I	
<b>Topic 4</b> <b>Chemical analysis -Inorganic</b>									
CO6,CO7	<p>Demonstrate the presence of inorganic substance</p> <p>1.Aluminium</p> <p>2.Calcium</p> <p>3.Chloride in the given raw drug along with the interpretation of the result.</p>	PSY-GUD	MK	SH	L,D		F&S	I	
CO6,CO7	Discuss the presence of inorganic compound in Aluminium,Calcium,Chloride in various sample	PSY-GUD	MK	SH			F&S	I	
CO6,CO7	Discuss the biological importance of calcium presence in various	CC	DK	KH			F&S	I	

	siddha medicine								
<b>Topic 5</b>									
<b>Phytochemical analysis</b>									
CO6,CO7	Demonstrate the presence/absence of phytochemicals(1.Acids 2.Alkaloids 3.Aminoacids 4. Proteins 5.Carbohydrates) in the given raw drug along with the interpretation of the result	PSY-GUD	MK	SH	DA,D	P-EXAM,P-PRF	F&S	I	
CO6,CO7	Discuss the presence of phytochemical compound of Acids, Alkaloid, Aminoacid, Protein, Carbohydrates in various sample	CK	MK	KH			F&S	I	
<b>Topic 6</b>									
<b>Raw drug identification- Mooligaikal(Plants)</b>									
CO6,CO7	Identify and describe the Botanical name,Parts used, Phytochemicals,Therapeutic uses and Pharmacological activity of the following drugs 1. Akkarakaram- Anacylus pyrethrum, 2. Athimathuram-Glycyrrhiza glabra 3. Athividayam-Aconitum heterophyllum 4. Amukkurakkizhangu -Withania somnifera 5. Arathai-Alpinia galangal	CC	MK	KH	L,D	P-ID	F&S	I	H-MT

	6. Alisivithai- <i>Linum usitatissimum</i> 7. Akasakarudan kilangu- <i>Corallocarpus epigeus</i> 8. Amanakku- <i>Ricinus communis</i> 9. Aavarai- <i>Cassia auriculata</i> 10. Alivirai- <i>Lepidium sativum</i> 11. Isappukoalvithai- <i>Plantago ovata</i> 12. Lavangam- <i>Syzygium aromaticum</i> 13. Lavangappattai- <i>Cinnamomum verum</i> 14. Lavangapathiri- <i>Cinnamomum tamala</i> 15. Etti- <i>Strychnos nux-vomica</i> 16. Elam- <i>Elettaria cardamomum</i> 17. Omam- <i>Carum copticum</i> 18. Kurosani omam- <i>Hyoscyamus niger</i> 19. Kadukkai- <i>Terminalia chebula</i> 20. KadukkaiThol – <i>Terminalia chebula</i> 21. Kadukkai Poo- <i>Terminalia chebula</i> 22. KadukkaiPinju- <i>Terminalia chebula</i> 23. Kadugarohini- <i>Picrorhiza scrophularifolia</i> 24. Kandangattari- <i>Solanum surattense</i> 25. Kanduparangi- <i>Clerodendron serratum</i> 26. KappuManjal- <i>Curcuma longa</i> 27. Kasthurimanjal- <i>Curcuma aromatic</i> 28. Kariabolam- <i>Aloe littoralis</i> 29. KariManjal- <i>Curcuma longa</i> 30. Karunsirakam- <i>Nigella sativa</i>								
CO6,CO7	Identify the given plant/raw drug based on its predominant bootham and interpret its influence on mukkutram	CC	MK	KH			F&S	I	
CO6,CO7	Observe the given clinical condition, establish the deranged mukkutram and mention the plants that pacifies	PSY-GUD	MK	KH			F&S	I	

	the deranged kuttram. Justify your choice on the basis of suvai, thanmai and pirivu.								
CO6,CO7	Observe the given plants/drugs with a particular pharmacological activity (Any three) and offer an interpretation to the pharmacological activity based on suvai, thanmai and pirivu.	PSY-GUD	MK	SH			F&S	I	
<b>Topic 7</b>									
<b>Raw drug identification- Thathu porutkal(Metals,Minerals)</b>									
CO6,CO7	Identify the following drug and describe its chemical name, Action, General properties and Therapeutics uses . 1.Anjanakal- Antimony 2. Appiragam – Mica 3. Ayam - Iron 4. Annabedhi - Green vitriol 5. Induppu- Sodium Chloride 6. Lingam - Cinnabar 7. Kadalnurai 8. Gandhagam -Sulphur 9. Kalmatham 10.Kalnar - Asbestos 11.Kalluppu – Rock Salt 12. Kariuppu-Common salt 13. Karchunnam - Lime stone	CC	MK	KH	L&PP T		F&S	I	H- GMK

<b>Topic 8</b>									
<b>Raw drug identification-Jeevam(Animal origin)</b>									
CO6,CO7	Identify and describe its Zoological name, action, General properties, Therapeutic uses of the following drugs 1. Kilinzal - Oyster 2. Kulavikoodu –Wasp nest 3. Nathai- Fresh water snail	CC	MK	KH	L&PP T,D		F&S	I	
<b>Topic 9</b>									
<b>Purification of following raw drugs-Mooligaikal(Plants)</b>									
CO6,CO7	Describe the purification with the help of Aim, requirements, Procedure, Result and therapeutic uses of following herb  1. Chitramoolam ver 2. Serankottai 3. Nervaalam	CC	MK	KH	L,DIS		F&S	II	
CO6,CO7	Demonstrate purification procedure for following herbs 1.Chithiramoolam ver 2.Serankottai	PSY- GUD	MK	SH			F&S	II	



	3. Nervaalam								
CO6,CO7	Interpret the changes noted during the purification.	CAP	MK	KH			F&S	II	
CO6,CO7	Describe the Adverse reaction occur during the process of Serangkottai paal on suddhi and explain its prophylaxis.	CK	MK	KH			F&S	II	
CO6,CO7	Discuss about the isolation and characterization of an anticancer catechol compound from Semecarpus anacardium	CC	MK	KH			F&S	II	
CO6,CO7	Explain the pharmacological importance of croton tiglium and list the herbs with similar activity.	CK	MK	KH			F&S	II	
<b>Topic 10</b>									
<b>Purification of following raw drugs- Thathu porutkal(Metals,Minerals)</b>									
CO6,CO7	Describe the purification with the help of Aim, requirements, Procedure, Result and therapeutic uses of following drugs 1.Karpuram 2.Kantham 3.Kaavikkal 4.Kuthiraippalpadanam 5.Silasathu 6.Thalagam	PSY-GUD	MK	SH	D,PR A		F&S	II	

	7.Nandukkal 8.Naagam 9.Padikaram 10.Pavalaputru 11.Pooram								
CO6,CO7	Demonstrate purification procedure for following drugs  1.Karpuram 2.Kantham 3.Kaavikkal 4.Kuthiraippalpadanam 5.Silasathu 6.Thalagam 7.Nandukkal 8.Naagam 9.Padikaram 10.Pavalaputru 11.Pooram	PSY-GUD	MK	SH			F&S	II	
CO6,CO7	Intepret the Changes noted during the purification	CC	MK	KH			F&S	II	
CO6,CO7	Perform an experiment to observe the result of boiling milk in a vessel made of Gaandham	CAP	DK	SH			F&S	II	
CO6,CO7	Discuss the importance of Kavikkal in the management of Herpes.	CC	MK	KH			F	II	

CO6,CO7,CO9	Explain the verses "penney manthiraththinaar pirakkumey thalakang kannana rannan kavinperu saamparey"	CK	DK	KH			F	II	
CO6,CO7	Explain about the Padigara patru used in the management of Eye diseases . Discuss about the Historical evidence of Alum which is mentioned as the " Elixir of life "in traditional chinese medicine . Explain about Padigaram and Thetrankottai which are involved in the process of purification of Water. Evaluate the Styptic Activity of Padigaram and Padiga linga thubar	CC	MK	KH			F	II	
CO6,CO7	Distinguish between the chemical properties of Pooram and Veeram .	CAN	DK	KH			F	II	
<b>Topic 11</b>									
<b>Purification of following raw drugs-Jeevam(Animal origin)</b>									
CO6,CO7	Describe the purification with the help of Aim, Requirements, Procedure, Result and therapeutic uses of following animal origin drugs  1. Palagarai, 2. Muttai odu	CC	MK	KH	L&G D,RE C	P-VIVA,P- EXAM,P-PRF	F&S	II	

CO6,CO7	Demonstrate the purification procedure for following animal origin drugs 1. Palagarai, 2. Muttai odu	PSY-GUD	MK	KH			F&S	II	
CO6,CO7	Intepret the Changes noted during the purification	CAP	MK	KH			F&S	II	
<b>Topic 12</b>									
<b>Chemical analysis-Inorganic</b>									
CO6,CO7	Analyze the given raw drugs for presence / absence of following inorganic substences and interpret the results  1. Carbonates/Bicarbonates, 2. Copper, 3. Iron, 4. Magnesium, 5. Mercury	PSY-GUD	MK	SH	L,DA		F&S	II	
CO6,CO7	Discuss the presence of inorganic compounds(1. Carbonates/Bicarbonates, 2. Copper, 3. Iron, 4. Magnesium, 5. Mercury) in various samples.	CAN	MK	KH			F&S	II	
<b>Topic 13</b>									
<b>Phytochemical analysis</b>									

CO6,CO7	Demonstrate the presence of Phytochemicals 1. Fat and oil 2.Flavanoids 3.Glycosides 4. Lignans, 5. Phenols 6. Resin in the given raw drug along with the interpretation of the result	PSY-GUD	MK	SH	L,DA		F&S	II	
CO6,CO7	Discuss the presence of Phyto chemicals such as (1. Fat and oil 2.Flavanoids 3.Glycosides, 4. Lignans, 5. Phenols, 6. Resin ) in various sample	CC	MK	KH			F&S	II	
<b>Topic 14</b>									
<b>Raw drug identification-Mooligaikal(Plants)</b>									
CO6,CO7	Identify and describe botanical name, Parts used, Phytochemical, Therapeutic uses and pharmacological activity for following 1.Kalapai kizhangu-Gloriosa superba 2.Kalarchi - Caesalpinia bonduc 3.KattattiPoo-Woodfordia fruticose 4.Kattusirakam-Veronia anthelmintica 5.Karpokarisi-Psoralea corylifolia 6.Kitchilikizhangu-Curcuma zedoaria	CC	MK	KH	L,PR A		F&S	II	H-MT

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|--|--|--|--|--|--|--|--|--|--|
| 7.Kungiliam-Shorea robusta                   |  |  |  |  |  |  |  |  |  |
| 8.Kungumappoo-Crocus sativus                 |  |  |  |  |  |  |  |  |  |
| 9.Kunthrikkam-Boswellia serrata              |  |  |  |  |  |  |  |  |  |
| 10.Kuruver-Vetiveria zizanoides              |  |  |  |  |  |  |  |  |  |
| 11.Kuntri-Abrus precatorius                  |  |  |  |  |  |  |  |  |  |
| 12.Koovaikizhangu-Maranta aurantinaceae      |  |  |  |  |  |  |  |  |  |
| 13.Kodiveli-Plumbago zeylanica               |  |  |  |  |  |  |  |  |  |
| 14.Koththumalli-Coriandrum sativum           |  |  |  |  |  |  |  |  |  |
| 15.Kottai karanthai                          |  |  |  |  |  |  |  |  |  |
| 16.Kottam-Costus speciosus                   |  |  |  |  |  |  |  |  |  |
| 17.Korai-Cyperus rotandus                    |  |  |  |  |  |  |  |  |  |
| 18.Jadamanji-Nardostachys grandiflora        |  |  |  |  |  |  |  |  |  |
| 19.Shenbagam -Michelia champaca              |  |  |  |  |  |  |  |  |  |
| 20.Chathakuppai-Anethum graveolens           |  |  |  |  |  |  |  |  |  |
| 21.Chandanam-Santalum album                  |  |  |  |  |  |  |  |  |  |
| 22.Sarakondrai-Cassia fistula                |  |  |  |  |  |  |  |  |  |
| 23.Jadhikai-Myristica fragrans               |  |  |  |  |  |  |  |  |  |
| 24.Chathipaththiri-Myristica fragrans        |  |  |  |  |  |  |  |  |  |
| 25.Shambrani-Styrax benzoin                  |  |  |  |  |  |  |  |  |  |
| 26.Sivathai-Operculina turpethum             |  |  |  |  |  |  |  |  |  |
| 27.Chirunagapu-Mesua nagassarium             |  |  |  |  |  |  |  |  |  |
| 28.Chitramutti-Pavonia zeylanica             |  |  |  |  |  |  |  |  |  |
| 29.Cheekai-Acasias inuata                    |  |  |  |  |  |  |  |  |  |
| 30.Sindil-Tinospora cordifolia               |  |  |  |  |  |  |  |  |  |
| 31.Chukku-Zingiber officinale                |  |  |  |  |  |  |  |  |  |
| 32.Chundai-Solanum torvum                    |  |  |  |  |  |  |  |  |  |
| 33.Sevviyam-Piper longum                     |  |  |  |  |  |  |  |  |  |
| 34.Cherankottai-Semecarpus anacardium        |  |  |  |  |  |  |  |  |  |
| 35.Thannirvittankizhangu-Asparagus racemosus |  |  |  |  |  |  |  |  |  |
| 36.Thalisa-paththiri-Abies spectabilis       |  |  |  |  |  |  |  |  |  |
| 37.Thantri-Terminalia bellerica              |  |  |  |  |  |  |  |  |  |
| 38.Thippili-Piper longum                     |  |  |  |  |  |  |  |  |  |

	39.Thiopliver-Piper longum 40.Thettran-Strychnos potatorum								
CO6,CO7	Identify the given plant/raw drug based on its predominant bootham and interprets its influence on mukkutram	CC	MK	KH			F&S	II	
CO6,CO7	Observe the given clinical condition, establish the deranged mukkutram and mention the plants that pacifies the deranged kuttram. Justify your choice on the basis of suvai, thanmai and pirivu.	PSY-SET	MK	KH			F	II	
CO6,CO7	Observe the given plants/drugs with a particular pharmacological activity (Any three) and offer an interpretation to the pharmacological activity based on suvai, thanmai and pirivu.	PSY-GUD	MK	KH			F&S	II	
<b>Topic 15</b>									
<b>Raw drug identification- Thathu porutkal(Metals,Minerals)</b>									
CO6,CO7	Identify and describe the following raw drug with the help of Chemical name, Action, General properties, Therapeutic uses and names of the different formulation pertaining to drugs  1. Karpoorasilasathu - Gypsum	CC	MK	KH	L,L&GD		F&S	II	

2. Kadikkaram - Nitrate of silver

3. Kareyam - Lead

4. Kavikkal -, Red ochre

5. Kanavai odu- Cuttle fish bone

6. Kuthiraipal paadanam

7. Gomuthra silasathu - Asphaltum

8. Gowri - Yellow oxide of arsenic

9. Cheenakkaram - Alum

10. Thalagam - Yellow Arsenic

11. Thambiram – Copper

12. Thurusu - Blue vitriol



	13.Nandukkal - Fossil stone crab								
	14.Navachcharam - Sal ammonia								
	15.Nagam - Zinc								
	16.Saathirabedhi								
	17. Pachai karpooram - Borneo camphor								
	<b>18.Palthutham, - Sulphate of zinc</b>								
<b>Topic 16</b>									
<b>Raw drug identification-Jeevam(Animal origin)</b>									
CO6,CO7	Identify and describe the following raw drug with the help of Zoological name, Actions, General properties, Therapeutic uses and Name of the preparation pertaining to the raw drug. 1.Kombaraku- Lacca 2. Sangu-Conch shell, 3. Then- Honey, 4. Pallakarai –Cowry 5.Pavalam, Kodipavalam- Coral , 6.Indrakopa poochi-Mutilla occidentalis	CC	MK	KH	L_VC ,DIS		F&S	II	

<b>Topic 17</b>									
<b>Purification of raw drugs-Mooligaikal(Plants)</b>									
CO6,CO7	Describe the purification with the help of Aim, Requirements, Procedure, Result and therapeutic uses of following herb  1. Parangipattai suddhi  2. Perungayam suddhi  <b>3.Vasambu suddhi</b>	CK	MK	KH	L&G D		F&S	III	
CO6,CO7	Demonstrate purification procedure for following herbs 1.Parangipattai suddhi 2.Perungayam suddhi 3.Vasambu suddhi	PSY- GUD	MK	SH			F&S	III	
CO6,CO7	Intepret the Changes noted during the purification process	CC	MK	SH			F&S	III	
CO6,CO7	Discuss the historical importance of vasambu in braintonic	CK	MK	KH			F&S	III	

CO6,CO7	State the importance of vasambu as persolla marunthu	CK	MK	KH			F&S	III	
<b>Topic 18</b>									
<b>Purification of raw drugs-Thatthu porutkal(Metals,Minerals)</b>									
CO6,CO7	Describe the purification with the help of Aim, requirements, Procedure, Result and therapeutic uses of following metals and minerals 1.Mayilthuththam method I( Sikitcha ratna deepam method 1 page no :38) 2.Mayilthuththam method II( Marunthu sei iyalum kalaiyum page no :98) 3.Mayilthuththam method II (Gunapadam thatthu jeeva vaguppu Method 1 page no:551) 4.Manosilai 5.Vengaram 6.Vediyuppu 7.Velvangam	CC	MK	KH	L_VC		F&S	III	
CO6,CO7	Demonstrate purification procedure for following minerals 1.Mayilthuththam method I( Sikitcha ratna deepam method 1 page no :38) 2.Mayilthuththam method II( Marunthu sei iyalum kalaiyum page no :98) 3.Mayilthuththam method II (Gunapadam thatthu jeeva vaguppu Method 1 page no:551)	PSY-GUD	MK	SH			F&S	III	

	4.Manosilai 5.Vengaram 6.Vediuppu 7.Velvangam								
CO6,CO7	Interpret the Changes noted during the purification process.	CAN	MK	KH			F&S	III	
CO6,CO7	Describe the name "Narpachchai " given to Mayilthutham	CK	DK	KH			F	III	
CO6,CO7	Discuss about Thurusu or Copper sulphate a cure for " Thuthi noi " " and identify another type of mineral with similar therapeutic action.	CK	MK	KH			F	III	
CO6,CO7	Perform an experiment and observe whether Manoselai (Arsenic disulphide ) is flammable when reacts with Vediuppu ( Potassium nitrate )	CAP	MK	KH			F	III	
CO6,CO7	Interpret the Insecticide activity of Vengaram. Illustrate the secret of using Borax powder in the Cosmetic industry.	CK	MK	KH			F	III	

## Topic 19

### Purification of raw drugs-Jeevam

CO6,CO7	Describe the purification with the help of Aim, requirements, Procedure, Result and therapeutic uses of following drugs - Animal origin 1. Mutthuchippi, 2. Mezhugu	CK	MK	KH			F&S	III	
CO6,CO7	Demonstrate the purification procedure for the following drugs - - Animal origin 1.Muthuchippi 2. Mezhugu	PSY-GUD	MK	SH			F&S	III	
CO6,CO7	Interpret the changes noted during the purification process.	CC	MK	KH			F&S	III	
<b>Topic 20</b>									
<b>Chemical analysis -Inorganic</b>									
CO6,CO7	Demonstrate the presence /absence of inorganic substances(Pottasium / Sodium / Sulpur) in the given raw drug along with the interpretation of the result.	PSY-GUD	MK	SH	L&PP T,DA		F&S	III	
CO6,CO7	Discuss presence of inorganic compound pottasium, sodium, sulphate in various samples	CAN	MK	KH			F&S	III	
<b>Topic 21</b>									
<b>Phytochemical analysis</b>									

CO6,CO7	Demonstrate the presence/absence of phytochemicals 1.Saponin 2.Steroids 3.Tannin 4. Terpenoids 5.Quinones in the given raw drug along with the interpretation of the result	PSY-GUD	MK	SH			F&S	III	
<b>Topic 22</b>									
<b>Raw drug identification-Mooligaikal(Plants)</b>									
CO6,CO7	Identify and describe the following raw drug and its botanical name, parts used, Phytochemicals Therapeutic uses and pharmacological activity.  1.Nannari-Hemidesmus indicus  2.Nabi-Aconitum napellus  3.Naval-Syzygium cumini	CK	DK	KH			F&S	III	H-MT

4.Nilavembu-Andrographis paniculata

5.Nilavarai - Cassia senna

6.Neeradimuthu-Hydnocarpus laurifolia

7.Neermulli - Hygrophila auriculata

8.Nerunjil-Tribulus terrestris

9.Nelli vatral -Phyllanthus emblica

10.Nervalam-Croton tiglium

11.Parangippattai-Smilax china

12.Parppatakam-Hedyotiscoryambose

13.Palasu-Buteamonosperma

14.Poonaikankungliyum-Shorearobusta

15.Poonaikali-Mucuna pruriens

16.Perunchirakam-Pimpinela anisum

17.Manjal -Curcuma longa

18.Manathakali-Solanum nigrum

19.Maramanjil-Cosciniun fenestratum

20.Masikkai-Quercusinfectoria

21.Masipaththiri-Artemesia nilagirica

22.Alivirai-Lepidiumsativum

23.Milagu-Pipernigrum

24.Vasambu-Acoruscalamus

25.Valampurikkai-Helicteres isora



	26.Seerakam –cumimum cymimum								
	27. Manathakkali- solanum nigrum								
	28.Nilapanai kizhangu – Curculigo orchids								
	29.Nirmuli- Hygrophila auriculata								
	30. Vettiver-vetivera zizanoids								
CO6,CO7	Identify the given plant/raw drug based on its predominant bootham, and interpret its influence on mukkutram	CK	MK	KH			F&S	III	
CO6,CO7	Observe the given clinical condition, establish the deranged mukkutram and mention the plants that pacifies the deranged kuttram. Justify your choice on the basis of suvai, thanmai and pirivu.	PSY-SET	MK	KH	PT		F&S	III	
CO6,CO7	Observe the given plants/drugs with a particular pharmacological activity (Any three) and offer an interpretation to the pharmacological activity based on suvai, thanmai and pirivu	PSY-GUD	MK	KH			F&S	III	

### Topic 23

#### Raw drug identification- Thathu porutkal(Metals,Minerals)

CO6,CO7	Identify and describe the following raw drugs with the help of Chemical name, Actions, General properties and Therapeutic uses and Name of the preparations pertaining to the raw drug. 1.Pidalavanam - Black salt 2. Pooneeru - Fuller's earth 3.Mandooram - Ferrous Ferric Oxide 4.Manosilai- Realger 5.Mirudharsingi - Galena Sulphide 6.Pooram - Hydragyrum subchloride 7. Rasa chendooram - Red Sulphide of mercury 8. Rasam- Mercury 9.Soodan- Camphor 10.Veeram - Corrosive sublimate 11.Vengaram - Borax 12.Vediuppu- Potassium nitrate 13.Palthutham- Sulphate of zinc	CC	MK	KH			F&S	III	
<b>Topic 24</b>  <b>Raw drug identification-Jeevam(Animal origin)</b>									
CO6,CO7	Identify and describe the zoological name , pothu gunam and therapeutic uses of following drugs. 1. Punugu- Civet cat 2. Manjal mezhgu - Cera Wax 3. Muthuchippi - Pearl oyster shell	CC	MK	KH	D		F&S	III	H- GMK

**Table 4a: List of Practical**

S.No	Name of practical	Term	Activity	Practical hrs
1	Purification of following raw drugs- Mooligaikal(Plants)	1	<ul style="list-style-type: none"> <li>• 1. Aatruthummatti suddhi</li> <li>• 2.Kariyabolam suddhi</li> <li>• 3.Kungiliyam suddhi</li> </ul>	6
2	Purification of following raw drugs- Thathu portukal(Metals,Minerals)	1	<ul style="list-style-type: none"> <li>• 1. Abraham suddhi</li> <li>• 2. Annabedhi suddhi</li> <li>• 3. Indhuppu suddhi</li> <li>• 4. Rasam suddhi</li> <li>• 5. Ganthagam suddhi-Method I(Gunapadam thathu jeeva vaguppu method 1 page no:305)</li> <li>• 6.Ganthagam suddhi-Method II(Gunapadam thathu jeeva vaguppu method 2 page no:305)</li> <li>• 7.Ganthagam suddhi- Method III(sarakku suthi sei muraikal Method 14 Page No:65)</li> </ul>	14
3	Purification of raw drugs- Jeevam(Animal origin)	1	<ul style="list-style-type: none"> <li>• 1.Kombarakku suddhi</li> <li>• 2.Sangu suddhi</li> </ul>	4
4	Chemical analysis -Inorganic	1	<ul style="list-style-type: none"> <li>• 1.Determination of qualitative analysis of Aluminium in the given sample</li> <li>• 2.Determination of qualitative analysis of Calcium in the given sample</li> <li>• 3.Determination of qualitative analysis of Chloride in the given sample</li> </ul>	3
5	Phytochemical analysis	1	<ul style="list-style-type: none"> <li>• 1.Determination of qualitative analysis of Acids in the given sample</li> </ul>	5

			<ul style="list-style-type: none"> <li>• 2.Determination of qualitative analysis of Alkaloids in the given sample</li> <li>• 3.Determination of qualitative analysis of Aminoacids in the given sample</li> <li>• 4.Determination of qualitative analysis of Proteins in the given sample</li> <li>• 5.Determination of qualitative analysis of Carbohyrates in the given sample</li> </ul>	
6	Raw drug identification- Mooligaikal(Plants)	1	<ul style="list-style-type: none"> <li>• 1. Akkarakaram- Anacylus pyrethrum,</li> <li>• 2. Athimathuram-Glycyrrhiza glabra</li> <li>• 3. Athividayam-Aconitum heterophyllum,</li> <li>• 4. Amukkurakkizhangu -Withania somnifera</li> <li>• 5. Arathai-Alpinia galangal</li> <li>• 6.Alisivithai-Linum usitatissimum</li> <li>• 7.Akasakarudan kilangu-Corallocarpus epigeous</li> <li>• 8.Amanakku- Ricinus communis</li> <li>• 9.Aavarai-Cassia auriculata</li> <li>• 10. Alivirai-Lepidium sativum</li> <li>• 11 .Isappukoalvithai-Plantago ovata</li> <li>• 12. Lavangam-Syzygium aromaticum</li> <li>• 13. Lavangappattai-Cinnamomum verum</li> <li>• 14.Lavangapathiri-Cinnamomum tamala</li> <li>• 15.Etti-Strychnosnux-vomica</li> <li>• 16.Elam-Elettaria cardamomum</li> <li>• 17.Omam-Carum copticum</li> <li>• 18.Kurosani omam-Hyoscyamus niger</li> <li>• 19. Kadukkai-Terminalia chebula</li> <li>• 20. KadukkaiThol –Terminalia chebula</li> <li>• 21.Kadukkai Poo-Terminalia chebula</li> <li>• 22.KadukkaiPinju-Terminalia chebula</li> <li>• 23.Kadugarohini-Picrorhiza scrophularifolia</li> <li>• 24.Kandangkattari-Solanum surattense</li> <li>• 25.Kanduparangi-Clerodendron serratum</li> <li>• 26.KappuManjal-Curcuma longa</li> <li>• 27.Kasthurimanjal-Curcuma aromatic</li> <li>• 28.Kariabolam-Aloe littoralis</li> <li>• 29.KariManjal-Curcuma longa</li> <li>• 30.Karunsirakam-Nigella sativa</li> </ul>	9

<b>7</b>	Raw drug identification- Thathu porutkal(Metals,Minerals)	1	<ul style="list-style-type: none"> <li>• 1.Anjanakal- Antimony</li> <li>• 2. Appiragam – Mica</li> <li>• 3. Ayam - Iron,</li> <li>• 4. Annabedhi - Green vitriol</li> <li>• 5. Induppu- Sodium Chloride</li> <li>• 6. Lingam - Cinnabar</li> <li>• 7. Kadalnurai,</li> <li>• 8. Gandhagam -Sulphur</li> <li>• 9. Kalmatham</li> <li>• 10.Kalnar - Asbestos</li> <li>• 11.Kalluppu – Rock Salt</li> <li>• 12. Kariuppu-Common salt</li> <li>• 13. Karchunnam - Lime stone</li> </ul>	4
<b>8</b>	Raw drug identification- Jeevam(Animal origin)	1	<ul style="list-style-type: none"> <li>• 1. Kilinzal - Oyster,</li> <li>• 2. Kulavikoodu –Wasp nest</li> <li>• 3. Nathai- Fresh water snail</li> </ul>	2
<b>9</b>	Purification of following raw drugs- Mooligaikal(Plants)	2	<ul style="list-style-type: none"> <li>• 1.Chithiramoolam ver suddhi</li> <li>• 2.Serankottai suddhi</li> <li>• 3.Nervaalam suddhi</li> </ul>	3
<b>10</b>	Purification of following raw drugs- Thathu porutkal(Metals,Minerals)	2	<ul style="list-style-type: none"> <li>• 1.Karpuram suddhi</li> <li>• 2.Kantham suddhi</li> <li>• 3.Kaavikkal suddhi</li> <li>• 4.Kuthiraippalpadanam suddhi</li> <li>• 5.Silasathu suddhi</li> <li>• 6.Thalagam suddhi</li> <li>• 7.Nandukkal suddhi</li> <li>• 8.Naagam suddhi</li> <li>• 9.Padikaram suddhi</li> <li>• 10.Pavalaputru suddhi</li> <li>• 11.Pooram suddhi</li> </ul>	22

<b>11</b>	Purification of following raw drugs-Jeevam(Animal origin)	2	<ul style="list-style-type: none"> <li>• 1.Palakarai suddhi</li> <li>• 2.Muttai odu suddhi</li> </ul>	4
<b>12</b>	Chemical analysis-Inorganic	2	<ul style="list-style-type: none"> <li>• 1.Determination of qualitative analysis of Carbonates and Bicarbonates in the given sample</li> <li>• 2.Determination of qualitative analysis of Copper in the given sample</li> <li>• 3.Determination of qualitative analysis of Iron in the given sample</li> <li>• 4.Determination of qualitative analysis of Magnesium in the given sample</li> <li>• 5.Determination of qualitative analysis of Mercury in the given sample</li> </ul>	5
<b>13</b>	Phytochemical analysis	2	<ul style="list-style-type: none"> <li>• 1.Determination of qualitative analysis of Fat and oil in the given sample</li> <li>• 2.Determination of qualitative analysis of Flavanoids in the given sample</li> <li>• 3.Determination of qualitative analysis of Glycosides in the given sample</li> <li>• 4.Determination of qualitative analysis of LignansI in the given sample</li> <li>• 5.Determination of qualitative analysis of Phenols in the given sample</li> <li>• 6.Determination of qualitative analysis of Resin in the given sample</li> </ul>	6
<b>14</b>	Raw drug identification-Mooligaikal(Plants)	2	<ul style="list-style-type: none"> <li>• 1.Kalapai kizhangu-Gloriosa superba</li> <li>• 2.Kalarchi - Caesalpinia bonduc</li> <li>• 3.KattattiPoo-Woodfordia fruticose</li> <li>• 4.Kattusirakam-Veronia anthelmintica</li> <li>• 5.Karpokarisi-Psoralea corylifolia</li> <li>• 6.Kitchilikizhangu-Curcuma zedoaria</li> <li>• 7.Kungiliam-Shorea robusta</li> <li>• 8.Kungumappoo-Crocus sativus</li> </ul>	12

			<ul style="list-style-type: none"> <li>• 9.Kunthrikkam-Boswellia serrata</li> <li>• 10.Kuruver-Vetiveria zizanoides</li> <li>• 11.Kuntri-Abrus precatorius</li> <li>• 12.Koovaikizhangu-Maranta aurantinaceae</li> <li>• 13.Kodiveli-Plumbago zeylanica</li> <li>• 14.Koththumalli-Coriandrum sativum</li> <li>• 15.Kottai karanthai</li> <li>• 16.Kottam-Costus speciosus</li> <li>• 17.Korai-Cyperus rotandus</li> <li>• 18.Jadamanji-Nardostachys grandiflora</li> <li>• 19.Shenbagam -Michelia champaca</li> <li>• 20.Chathakuppai-Anethum graveolens</li> <li>• 21.Chandanam-Santalum album</li> <li>• 22.Sarakondrai-Cassia fistula</li> <li>• 23.Jadhikai-Myristica fragrans</li> <li>• 24.Chathipaththiri-Myristica fragrans</li> <li>• 25.Shambrani-Styrax benzoin</li> <li>• 26.Sivathai-Operculina turpethum</li> <li>• 27.Chirunagapu-Mesua nagassarium</li> <li>• 28.Chitramutti-Pavonia zeylanica</li> <li>• 29.Cheekai-Acasias inuata</li> <li>• 30.Sindil-Tinospora cordifolia</li> <li>• 31.Chukku-Zingiber officinale</li> <li>• 32.Chundai-Solanum torvum</li> <li>• 33.Sevviyam-Piper longum</li> <li>• 34.Cherankottai-Semecarpus anacardium</li> <li>• 35.Thannirvittankizhangu-Asparagus racemosus</li> <li>• 36.Thalisa-paththiri-Abies spectabilis</li> <li>• 37.Thantri-Terminalia bellerica</li> <li>• 38.Thippili-Piper longum</li> <li>• 39.Thipliver-Piper longum</li> <li>• 40.Thettran-Strychnos potatorum</li> </ul>	
15	Raw drug identification- Thathu porutkal(Metals,Minerals)	2	<ul style="list-style-type: none"> <li>• 1. Karpoorasilasathu - Gypsum</li> <li>• 2. Kadikkaram - Nitrate of silver</li> <li>• 3. Kareyam - Lead</li> <li>• 4. Kavikkal -, Red ochre</li> <li>• 5. Kanavai odu- Cuttle fish bone</li> <li>• 6. Kuthiraipal paadanam</li> <li>• 7. Gomuthra silasathu - Asphaltum</li> <li>• 8.Gowri -Yellow oxide of arsenic</li> <li>• 9.Cheenakkaram - Alum</li> <li>• 10.Thalagam - Yellow Arsenic</li> <li>• 11.Thambiram – Copper</li> </ul>	7

			<ul style="list-style-type: none"> <li>• 12.Thurusu - Blue vitriol</li> <li>• 13.Nandukkal - Fossil stone crab</li> <li>• 14.Navachcharam - Sal ammonia</li> <li>• 15.Nagam - Zinc</li> <li>• 16.Saathirabedhi</li> <li>• 17. Pachai karpooram - Borneo camphor</li> <li>• 18.Palthutham, - Sulphate of zinc.</li> </ul>	
<b>16</b>	Raw drug identification- Jeevam(Animal origin)	2	<ul style="list-style-type: none"> <li>• 1.Kombaraku- Lacca</li> <li>• 2. Sangu-Conch shell</li> <li>• 3. Then- Honey</li> <li>• 4. Pallakarai –Cowry</li> <li>• 5.Pavalam, Kodipavalam- Coral</li> <li>• 6.Indrakopa poochi-Mutilla occidentalis</li> </ul>	2
<b>17</b>	Purification of raw drugs- Mooligaikal(Plants)	3	<ul style="list-style-type: none"> <li>• 1.Parangipattai suddhi</li> <li>• 2.Perungayam suddhi</li> <li>• 3.Vasambu suddhi</li> </ul>	6
<b>18</b>	Purification of raw drugs- Thathu porutkal(Metals,Minerals)	3	<ul style="list-style-type: none"> <li>• 1.Mayilthuththam suddhi method I( Sikitcha ratna deepam page no : 38)</li> <li>• 2.Mayilthuththam suddhi method II( Marunthu sei iyalum kalaiyum page no :98)</li> <li>• 3.Mayilthuththam suddhi method II (Gunapadam thathu jeeva vaguppu Method 1 page no:551)</li> <li>• 4.Manosilai suddhi</li> <li>• 5.Vengaram suddhi</li> <li>• 6.Vediyuppu suddhi</li> <li>• 7.Velvangam suddhi</li> </ul>	14
<b>19</b>	Purification of raw drugs- Jeevam	3	<ul style="list-style-type: none"> <li>• 1. Muthuchippi suddhi</li> <li>• 2. Mezhugu suddhi</li> </ul>	4



20	Chemical analysis -Inorganic	3	<ul style="list-style-type: none"> <li>• 1.Determination of qualitative analysis of Pottassium in the given sample</li> <li>• 2.Determination of qualitative analysis of Sodium in the given sample</li> <li>• 3.Determination of qualitative analysis of Sulphate &amp; Bicarbonates in the given sample</li> </ul>	3
21	Phytochemical analysis	3	<ul style="list-style-type: none"> <li>• 1.Determination of qualitative analysis Saponins of in the given sample</li> <li>• 2.Determination of qualitative analysis of Steroids in the given sample</li> <li>• 3.Determination of qualitative analysis of Tannin in the given sample</li> <li>• 4.Determination of qualitative analysis of Terpenoids in the given sample</li> <li>• 5.Determination of qualitative analysis of Quinones in the given sample</li> </ul>	5
22	Raw drug identification- Mooligaikal(Plants)	3	<ul style="list-style-type: none"> <li>• 1.Nannari-Hemidesmus indicus</li> <li>• 2.Nabi-Aconitum napellus</li> <li>• 3.Naval-Syzygium cumini</li> <li>• 4.Nilavembu-Andrographis paniculata</li> <li>• 5.Nilavarai - Cassia senna</li> <li>• 6.Neeradimuthu-Hydnocarpus laurifolia</li> <li>• 7.Neermulli - Hygrophila auriculata</li> <li>• 8.Nerunjil-Tribulus terrestris</li> <li>• 9.Nelli vatral -Phyllanthus emblica</li> <li>• 10.Nervalam-Croton tiglium</li> <li>• 11.Parangippattai–Smilax china</li> <li>• 12.Parppatakam-Hedyotiscoryambose</li> <li>• 13.Palasu-Buteamonosperma</li> <li>• 14.Poonaikankungliyum-Shorearobusta</li> <li>• 15.Poonaikali-Mucuna pruriens</li> <li>• 16.Perunchirakam-Pimpinela anisum</li> <li>• 17.Manjal -Curcuma longa</li> <li>• 18.Manathakali-Solanum nigrum</li> <li>• 19.Maramanjil-Coscinium fenestratum</li> <li>• 20.Masikkai-Quercusinfectoria</li> </ul>	9

			<ul style="list-style-type: none"> <li>• 21.Masipaththiri-Artemesia nilagirica</li> <li>• 22.Alivirai-Lepidiumsativum</li> <li>• 23.Milagu-Pipernigrum</li> <li>• 24.Vasambu-Acoruscalamus</li> <li>• 25.Valampurikkai-Helicteres isora</li> <li>• 26.seerakam –cumimum cymimum</li> <li>• 27. Manathakkali- solanum nigrum</li> <li>• 28.Nilapanai kizhangu – Curculigo orchids</li> <li>• 29.Nirmuli- Hygrophila auriculata</li> <li>• 30. Vettiver-vetivera zizanoids</li> </ul>	
<b>23</b>	Raw drug identification- Thathu porutkal(Metals,Minerals)	3	<ul style="list-style-type: none"> <li>• 1.Pidalavanam - Black salt</li> <li>• 2. Pooneeru - Fuller's earth</li> <li>• 3.Mandooram - Ferrous Ferric Oxide</li> <li>• 4.Manosilai- Realger</li> <li>• 5.Mirudharsingi - Galena Sulphide</li> <li>• 6.Pooram - Hydragyrum subchloride</li> <li>• 7. Rasa chendooram - Red Sulphide of mercury</li> <li>• 8. Rasam- Mercury</li> <li>• 9.Soodan- Camphor</li> <li>• 10.Veeram - Corrosive sublimate</li> <li>• 11.Vengaram - Borax</li> <li>• 12.Vediuppu- Potassium nitrate</li> <li>• 13.Palthutham- Sulphate of zinc</li> </ul>	4
<b>24</b>	Raw drug identification- Jeevam(Animal origin)	3	<ul style="list-style-type: none"> <li>• 1. Punugu- Civet cat</li> <li>• 2.Manjal mezhgu- Cera Wax</li> <li>• 2. Muthuchippi - Pearl oyster shell</li> </ul>	1
<b>Total Hr</b>				<b>154</b>

## Activity

CO	Topic name	Activity Details	Hours#
CO1,CO2	Herbal Garden Visit	Field trip Students will be taken to a field trip around the campus area or nearby botanical garden or any forest area near by our locality for the purpose of identification of medicinal plants.	5 hours
CO3	Geological – natural ores Identification visit (Metallic Ore / Mineral salt)	Field trip Students will be taken to visit the museum maintained by the Geological Survey of India located in Guindy, Chennai or any such museum to identify and understand the facts about Metallic and Mineral ores available. Students will also be taken to a field trip to topographical areas such as Salem(Kodumalai, Edapaadi, Kurumpatti, Kanjamalai, Sirapalli, Pallakapaalayam), Namakkal, Maamandur, etc) to collect the natural ores.	18 hours
CO3,CO4	Identification of Marine products	Field trip Conduct a field trip to visit the Marine resources. To identify the different Marine products for its familiarization & identification and its view on therapeutic uses.	6 hours
CO6	Pharmacy visit	Students are taken for pharmacy visit to learn the Procurement, Storage, and Purification techniques of raw drugs and gain knowledge about large scale preparation of quality medicine.	3 hours
CO2	Standardization protocols of siddha drugs	Lecture with PPT and further interaction on the same. Discussion on the basic techniques to standardize the siddha drugs and explain about herb-drug interactions.	30mins
CO3	Fullers earth/Earth's salt collection Purification (theetchai seithal)	Field visit , Hands on training Conduct field trip for the collection of Pooneru, with the guidance of traditional vaithiyar if possible. Pooneru is collected with various ideologies in	12 hours

		<p>specific days mentioned in various Siddha literatures, which can be documented and explored.</p> <p>Experts can be called for the classes. Symposium will be conducted with interaction and lecture about the purification techniques of fuller's earth. Further, students will be made to perform the purification techniques in the presence of experts.</p>	
CO6	Purification techniques of plants/metals/mineral/animal origins	<p>Flipped class room, Hands on training Lecture with AV.</p> <p>To demonstrate the various techniques described in Siddha medicine such as Juice extraction from Virali, Linga rasam, Poonaga sathu etc.</p>	1 hour
CO7	Interpretation of Gunapadam - Marunthiyal on the basis of tri-humoral theory in therapeutic approach	<p>Experts are called for the classes.</p> <p>Conduct workshop with interaction and lecture for the identification of the appropriate plant/raw drug that can be used to treat the particular tri-humoral clinical condition, based on the physical properties of plants, Metals, Mineral and animal origin like Suvai, Thanmai and Pirivu.</p>	2 hours

# Hours indicated are included in calculations of Table 3 and 4

**Table 5- Teaching learning method**

Sr No	Teaching learning methods in the course	No of Activities
1	Lecture	50
2	Lecture with Power point presentation	114
3	Lecture & Group Discussion	62
4	Lecture with Video clips	78
5	Discussions	24
6	Brainstorming	6
7	Inquiry-Based Learning	6
8	PBL	1
9	CBL	3

10	Project-Based Learning	2
11	TBL	2
12	Team project work	2
13	Flipped classroom	15
14	Blended Learning	3
15	Edutainment	3
16	Mobile learning	10
17	ECE	7
18	Role plays	1
19	Self-directed learning	9
20	Kinesthetic Learning	3
21	Workshops	1
22	Library Session	5
23	Peer learning	1
24	Real life experience	11
25	Recitation	5
26	Symposium	1
27	Tutorial	7
28	Presentations	8
29	Practical	1
30	Demonstration	5
31	Demonstration Lab	2
32	Demonstration Garden	5
33	Field visit	6
34	Activity	3

**Table 6: Assessment Summary: Assessment is subdivided in A to H points**

## **6 A-Number of Papers and Marks Distribution**

Subject Code	Papers	Theory	Practical/Clinical Assessment					Grand Total
			Practical	Viva	Elective	IA	Sub Total	
SIDUG – GMM	2	200	100	20	10 (Set-SA)	20	150	350

### 6 B - Scheme of Assessment (formative and Summative)

PROFESSIONAL COURSE	DURATION OF PROFESSIONAL COURSE		
	First Term (1-6 Months)	Second Term (7-12 Months)	Third Term (13-18 Months)
Second	3 PA & First TT	3 PA & Second TT	3 PA & UE

**PA:** Periodical Assessment; **TT:** Term Test; **UE\*\*:** University Examinations.

\*\* University Examination shall be on entire syllabus

## 6 C - Calculation Method for Internal assessment Marks

TERM	PERIODICAL ASSESSMENT*					TERM TEST**	TERM ASSESSMENT
	A	B	C	D	E	F	G
	1 (20)	2 (20)	3 (20)	Average (A+B+C/3) (20)	Term Test (MCQ+SAQ+LAQ and Practical) (Converted to 20)	Sub Total	Term Assessment
FIRST						D+E	(D+E)/2
SECOND						D+E	(D+E)/2
THIRD					NIL		D
<b>Final IA</b>	Average of Three Term Assessment Marks as Shown in 'G' Column.						
	<p>* Select an Evaluation Methods which is appropriate for the objectives of Topics from the Table 6 D. Convert it to 20 marks.</p> <p>** Conduct Theory (100 Marks) (MCQ (20*1 Marks), SAQ (8*5), LAQ (4*10)) and Practical (100 Marks) Then convert to 20 Marks.</p>						

## 6 D - Evaluation Methods for Periodical Assessment

S. No	Evaluation Methods
1	Practical / Clinical Performance
2	Viva Voce, MCQs, MEQ (Modified Essay Questions/Structured Questions)
3	Open Book Test (Problem Based)
4	Summary Writing (Research Papers/ Samhitas)
5	Class Presentations; Work Book Maintenance
6	Problem Based Assignment
7	Objective Structured Clinical Examination (OSCE), Objective Structured Practical Examination (OPSE), Mini Clinical Evaluation Exercise (Mini-CEX), Direct Observation of Procedures (DOP), Case Based Discussion (CBD)
8	Extra-curricular Activities, (Social Work, Public Awareness, Surveillance Activities, Sports or Other Activities which may be decided by the department).

9	Small Project
10	Activities Indicated in Table 3 - Column G3 as per Indicated I, II or III term in column I3 & I4

## 6 E Question Paper Pattern

### II PROFESSIONAL B.S.M.S EXAMINATIONS

#### SIDUG – GMM

#### PAPER-1

Time: 3 Hours Maximum Marks: 100

INSTRUCTIONS: All questions compulsory

		Number of Questions	Marks per question	Total Marks
Q 1	MULTIPLE CHOICE QUESTIONS (MCQ)	20	1	20
Q 2	SHORT ANSWER QUESTIONS (SAQ)	8	5	40
Q 3	LONG ANSWER QUESTIONS (LAQ)	4	10	40
				100

Similar for Paper II



## 6 F Distribution of theory examination

<b>Paper 1</b>						
<b>Sr. No</b>	<b>A List of Topics</b>	<b>B Term</b>	<b>C Marks</b>	<b>MCQ (1 Mark)</b>	<b>SAQ (5 Marks)</b>	<b>LAQ (10 Marks)</b>
1	<b>1. Introduction to Marunthiyal and basic principles of Marunthiyal</b>	1	3	Yes	No	No
2	<b>2. Gunapadam - Mooligai Sedigal part - I (Herbs)</b>	1	24	Yes	Yes	Yes
3	<b>3. Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</b>	2	37	Yes	Yes	Yes
4	<b>4. Gunapadam - Mooligai Sedigal part - II (Herbs)</b>	3	22	Yes	Yes	Yes
5	<b>Gunapadam - Mooligai Kodigal (Climbers &amp; Creepers)</b>	3	14	Yes	No	Yes
<b>Total Marks</b>			<b>100</b>			

<b>Paper 2</b>						
<b>Sr. No</b>	<b>A List of Topics</b>	<b>B Term</b>	<b>C Marks</b>	<b>MCQ (1 Mark)</b>	<b>SAQ (5 Marks)</b>	<b>LAQ (10</b>

						Marks)
6	<ul style="list-style-type: none"> <li>1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</li> </ul>	1	24	Yes	Yes	Yes
7	2. Gunapadam - Padanangal (Mineral salts)	2	17	Yes	Yes	Yes
8	3.Gunapadam - Karasaram (Salts and Alkalies)	2	19	Yes	Yes	Yes
9	4.Gunapadam - Uparasam (Mineral Substances)	2	18	Yes	Yes	Yes
10	5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems)	3	22	Yes	Yes	Yes
<b>Total Marks</b>			<b>100</b>			

## 6 G Blue print of paper I & II

Paper No:1		
Question No	Type of Question	Question Paper Format
Q1	<p><b>Multiple choice Questions</b>  <b>20 Questions</b>  <b>1 mark each</b>  <b>All compulsory</b></p> <p><b>Must know part - 15 MCQ</b>  <b>Desirable to know - 3 MCQ</b>  <b>Nice to know part - 2 MCQ</b></p>	<ol style="list-style-type: none"> <li>1. 1. Introduction to Marunthiyal and basic principles of Marunthiyal</li> <li>2. 1. Introduction to Marunthiyal and basic principles of Marunthiyal</li> <li>3. 1. Introduction to Marunthiyal and basic principles of Marunthiyal</li> <li>4. 2. Gunapadam - Mooligai Sedigal part - I (Herbs)</li> <li>5. 2. Gunapadam - Mooligai Sedigal part - I (Herbs)</li> <li>6. 2. Gunapadam - Mooligai Sedigal part - I (Herbs)</li> <li>7. 2. Gunapadam - Mooligai Sedigal part - I (Herbs)</li> <li>8. 3. Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</li> <li>9. 3. Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</li> <li>10. 3. Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</li> <li>11. 3. Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</li> <li>12. 3. Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</li> <li>13. 3. Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</li> </ol>

		<p>14. 3.Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</p> <p>15. 4. Gunapadam - Mooligai Sedigal part - II (Herbs)</p> <p>16. 4. Gunapadam - Mooligai Sedigal part - II (Herbs)</p> <p>17. Gunapadam - Mooligai Kodigal (Climbers &amp; Creepers)</p> <p>18. Gunapadam - Mooligai Kodigal (Climbers &amp; Creepers)</p> <p>19. Gunapadam - Mooligai Kodigal (Climbers &amp; Creepers)</p> <p>20. Gunapadam - Mooligai Kodigal (Climbers &amp; Creepers)</p>
<p><b>Q2</b></p>	<p><b>Short answer Questions</b>  <b>Eight Questions</b>  <b>5 Marks Each</b>  <b>All compulsory</b></p> <p><b>Must know - 7 SAQ</b>  <b>Desirable to know - 1 SAQ</b>  <b>No questions on Nice to know</b></p>	<p>1. 2. Gunapadam - Mooligai Sedigal part - I (Herbs)</p> <p>2. 2. Gunapadam - Mooligai Sedigal part - I (Herbs)</p> <p>3. 3.Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</p> <p>4. 3.Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</p> <p>5. 3.Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</p> <p>6. 3.Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</p> <p>7. 4. Gunapadam - Mooligai Sedigal part - II (Herbs)</p>

		8. 4. Gunapadam - Mooligai Sedigal part - II (Herbs)
<b>Q3</b>	<p><b>Long answer Questions</b>  <b>Four Questions</b>  <b>10 marks each</b>  <b>All compulsory</b></p> <p><b>All questions on must know.</b>  <b>No Questions on</b>  <b>Nice to know and Desirable to know</b></p>	<p>1. 2. Gunapadam - Mooligai Sedigal part - I (Herbs)</p> <p>2. 3. Gunapadam - Mooligai Marankal (Trees) and Gunapadam - Mooligai Perunsedigal, (Shrubs)</p> <p>3. 4. Gunapadam - Mooligai Sedigal part - II (Herbs)</p> <p>4. Gunapadam - Mooligai Kodigal (Climbers &amp; Creepers)</p>
<b>Paper No:2</b>		
<b>Question No</b>	<b>Type of Question</b>	<b>Question Paper Format</b>
<b>Q1</b>	<p><b>Multiple choice Questions</b>  <b>20 Questions</b>  <b>1 mark each</b>  <b>All compulsory</b></p> <p><b>Must know part - 15 MCQ</b>  <b>Desirable to know - 3 MCQ</b>  <b>Nice to know part - 2 MCQ</b></p>	<p>1      ◦ 1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</p> <p>2      ◦ 1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</p> <p>3      ◦ 1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</p> <p>4      ◦ 1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</p>

- |  |  |   |
|--|--|---|
|  |  | 5. 2. Gunapadam - Padanangal (Mineral salts)                        |
|  |  | 6. 2. Gunapadam - Padanangal (Mineral salts)                        |
|  |  | 7. 3. Gunapadam - Karasaram (Salts and Alkalies)                    |
|  |  | 8. 3. Gunapadam - Karasaram (Salts and Alkalies)                    |
|  |  | 9. 3. Gunapadam - Karasaram (Salts and Alkalies)                    |
|  |  | 10. 3. Gunapadam - Karasaram (Salts and Alkalies)                   |
|  |  | 11. 4. Gunapadam - Uparasam (Mineral Substances)                    |
|  |  | 12. 4. Gunapadam - Uparasam (Mineral Substances)                    |
|  |  | 13. 4. Gunapadam - Uparasam (Mineral Substances)                    |
|  |  | 14. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems) |
|  |  | 15. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems) |
|  |  | 16. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems) |
|  |  | 17. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems) |
|  |  | 18. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems) |
|  |  | 19. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems) |
|  |  | 20. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems) |

<p><b>Q2</b></p>	<p><b>Short answer Questions</b>  <b>Eight Questions</b>  <b>5 Marks Each</b>  <b>All compulsory</b></p> <p><b>Must know - 7 SAQ</b>  <b>Desirable to know - 1 SAQ</b>  <b>No questions on Nice to know</b></p>	<p>1      ◦ 1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</p> <p>2      ◦ 1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</p> <p>3. 2. Gunapadam - Padanangal (Mineral salts)</p> <p>4. 3. Gunapadam - Karasaram (Salts and Alkalies)</p> <p>5. 4. Gunapadam - Uparasam (Mineral Substances)</p> <p>6. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems)</p> <p>7. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems)</p> <p>/</p> <p>4. Gunapadam - Uparasam (Mineral Substances)</p> <p>8. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems)</p> <p>/</p> <p>4. Gunapadam - Uparasam (Mineral Substances)</p>
<p><b>Q3</b></p>	<p><b>Long answer Questions</b>  <b>Four Questions</b>  <b>10 marks each</b>  <b>All compulsory</b></p>	<p>1      ◦ 1.Introduction to Thathuporutkal, Gunapadam Ulogangal-Metals, Pancha sootham (Mercury and Mercurial Compounds), General pharmacology</p>

**All questions on must know.**  
**No Questions on**  
**Nice to know and Desirable**  
**to know**

2. 2. Gunapadam - Padanangal (Mineral salts)

3. 3. Gunapadam - Karasaram (Salts and Alkalies)

4. 5. Gunapadam - Jeevam (Animal kingdom) and Navamanigal – (Gems)

/

4. Gunapadam - Uparasam (Mineral Substances)



## 6 H Distribution of Practical Exam

S.No	Heads	Marks
1	PURIFICATION OF RAW DRUGS - MOOLOGAI(PLANTS), THATHU PORUTKAL(METALS AND MINERALS),JEEVAM(ANIMAL ORIGIN) - 60 Mins	20
2	CHEMICAL ANALYSIS AND PHYTOCHEMICAL ANALYSIS - 60 Mins	20
3	RAW DRUG IDENTIFICATION- MOOLIKAIGAL(PLANTS) - 20 mins No of spotters – 10 10 x 2= 20	20
4	RAW DRUG IDENTIFICATION - THATHU PORUTKAL(METALS & MINERALS) -15 mins No of spotters – 6 6 x 2= 12	12
5	RAW DRUG IDENTIFICATION – JEEVA PORUTKAL(ANIMAL ORIGIN) - 5 mins No of spotters – 1 1 x 2= 2	2
6	INTERPRETATION OF RAW DRUGS WITH SIDDHA BASIC PRINCIPLES AND ITS THERAPEUTIC USES -20 mins  No of spotters – 4 4 x 4= 16	16
7	PRACTICAL RECORD	10
8	VIVA	20
9	ELECTIVES (Set-SA)	10
10	INTERNAL ASSESMENT	20

<b>Total Marks</b>	<b>150</b>
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## References Books/ Resources

S.No	Book	Resources
1	Gunapadam Thaathu Jeeva Vaguppu	Dr. R.Thiyagarajan L. I. M , - Eighth Edition Directorate of Indian Medicine and Homeopathy, Chennai.
2	Gunapadam – Jeeva Vaguppu	Prof. Dr. R.Thiyagarajan L. I. M. Prof.Dr. I. Sournamariammal MD (S), Fifth Edition 2017. Directorate of Indian Medicine and Homeopathy, Chennai.
3	Gunapadam Thathu - Thathukkalin Vilakkamum Marunthu Muraikalum	Prof.Dr. I. Sournamariammal MD (S), Dr. S. Elanko BSMS, MSc., First Edition. Directorate of Indian Medicine and Homeopathy, Chennai
4	Patharthaguna Vilakkam	Vaithya Vithuvaan S.Kannusamy Pillai, Edition-2016, Thirumagal Press, Chennai.
5	<b>Indian Materia Medica Vol I &amp; Vol II</b>	A.K.Nadkarni,Third Revised Edition 1982,Reprint-2005 by Taj Press, Delhi.
6	Medical Pharmacology	Prof. Padmaja Udaykumar MD,Fifth Edition,CBS Publisher & Distributor, New Delhi.
7	Siddha Vaithya Thirattu	Dr.K.N. Kuppusamy Mudaliyaar,H.P.I.M Dr.K.S. Uthamarayan, Third Edition -2009, Directorate of Indian Medicine and Homeopathy, Chennai.
8	Siddha Maruthuvathil Noi Neekum Ganthagam	Prof. Dr.R. Ramasamy MD (S), First Edition Thaitanthai Press,Thirunelveli.
9	Vanamenum Vithiyilae - Noi Neekum Natchathira Mooligaikal  Naalum Kolum	Prof Dr. R. Ramasamy MD (S) First Edition-2011,Priyadharshini Printers,Sivakasi
10	Anuboga Vaithya Navaneetham Part II	Hakkim P.M. Abdullah Sahib , Third Edition

11	Gunapadam - Mooligai Part 1 Siddha Materia Medica( Medicinal Plants Division)	Vaithiya rathinam K.S.Murugesu Muthaliyar Fourth Edition 2006. Directorate of Indian Medicine and Homeopathy, Chennai.
12	Therayar Yamaga Venba moolamum & uraiyum	Hakkim P. Mohamed Abdulla Saibu
13	Aathmaratchamirtham ennum Vaithya Sara Sankeeragam	Vaithiya Vithuvan S. Kannusamy Pillai Ratna Nayagan sons 1908.
14	Theraiyar Kapiyam	Dr.A.Anandakumar, G C.I.M
15	Therayar karisal 300	T. Duraisamy Edition -1926 Buvaneshvari Press Chennai
16	Sikitcha Ratna Theepam	Vaithiya Vithuvan C. Kannusamy pillai
17	Compendium of Indian Medicinal Plants	Ram P Rastogi , B N Mehrotra Edition- 1998 Central Drug Research Institute And Publications,New Delhi.
18	Gmp Botanical Regulatory and Quality Issues on Phytomedicines	Robert Verpoorte Pulok K Mukherjee
19	Indian Medicinal Plants	Kritihar & Basu, Second Revised edition - 2012 .International Book Distributors
20	Pharmacology and Pharmacotherapeutics	R. S. Satoskar, Nirmala N Rege , Raakhik Tripathi, S.D. Bhandarkar 26 <sup>Th</sup> edition.
21	Quality control of Herbal drugs	Dr. Pulok, K.Mukherjee Edition 2012
22	Wealth of India	National Institute Of Science Communication And Information Resources C.S.I.R Jan 1985
23	Siddha Maruthuva Agaraadhi	Third edition - 2008 Directorate of Indian Medicine and Homeopathy

24	Tamil – English Dictionary vol I - vol VII	T V Sambasivam Pillai
25	Mooligai Thaavaraviyal Agaraadhi	B N Loganathan
26	Siddha Medicinal Plants of India - volume 1 & 2	Dr. J Jayavenketesh, Dr. M Pichchai Kumar, Dr. S.Sridar, Dr.S.Roja Ramani
27	Indian Medicinal Plants Database (IMPD)	<a href="https://www.tmpgc.com/">https://www.tmpgc.com/</a>
28	Central Council for Research in Siddha	<a href="https://siddhacouncil.com/ccrs/home/">https://siddhacouncil.com/ccrs/home/</a>
29	Kayakarpa Mooligaikal	Prof Dr. P. R. Ramasamy MD(S) First edition- 2017 Prathanan press, Rajapalayam.
30	Therayar Yamaga Venba Vol 1,2,3	The Indian Medicine & Homeopathy department
31	Siddha Maruthuvanga Surukkam	Dr. K.S.Uthamarayan,H.P.I.M Second edition- 2010 Directorate of Indian Medicine and Homeopathy.
32	Udal Thathuvam	Prof. Dr. P.M.Venugopal H P I M Directorate of Indian Medicine and Homeopathy.
33	Thotrakirama Aaratchiyum Siddha Maruthuva Varalarum	Dr. K.S.Uthamarayan,H.P.I.M Fourth edition- 2008 Directorate of Indian Medicine and Homeopathy.
34	Noi Neekum Thinai Mooligaikal	Prof Dr. P. R. Ramasamy MD(S) First edition- 2017 Prathanan press Rajapalayam.
35	Marunthakum Ilakiya Thavarangal	Prof Dr. P. R. Ramasamy MD(S) First edition- 2018 Shanmuga press Sivakasi.

36	Aasavam - Aristam	Prof Dr. P. R. Ramasamy MD(S) First edition- 2016 Thaithanthai press, Thirunelveli 627 012.
37	Malai Agarathi	Prof Dr. P. R. Ramasamy MD(S) First edition- 2016 Thaithanthai press, Thirunelveli 627 012.
38	Siddha Metrics	- <a href="https://play.google.com/store/apps/details?id=io.siddhametrics.com&amp;pli=1">https://play.google.com/store/apps/details?id=io.siddhametrics.com&amp;pli=1</a> Dr.S.Suresh MD(S)
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## Abbreviations

### Domain

S.No	Short form	Descriptions
1	CK	Cognitive/Knowledge
2	CC	Cognitive/Comprehension
3	CAP	Cognitive/Application
4	CAN	Cognitive/Analysis
5	CS	Cognitive/Synthesis
6	CE	Cognitive/Evaluation
7	PSY-SET	Psychomotor/Set
8	PSY-GUD	Psychomotor/Guided response
9	PSY-MEC	Psychomotor/Mechanism
10	PSY-ADT	Psychomotor Adaptation
11	PSY-ORG	Psychomotor/Origination
12	AFT-REC	Affective/ Receiving
13	AFT-RES	Affective/Responding
14	AFT-VAL	Affective/Valuing
15	AFT-SET	Affective/Organization
16	AFT-CHR	Affective/ characterization



## T L method

S.No	Short form	Descriptions
1	L	Lecture
2	L&PPT	Lecture with Power point presentation
3	L&GD	Lecture & Group Discussion
4	L_VC	Lecture with Video clips
5	DIS	Discussions
6	BS	Brainstorming
7	IBL	Inquiry-Based Learning
8	PBL	PBL
9	CBL	CBL
10	PrBL	Project-Based Learning
11	TBL	TBL
12	TPW	Team project work
13	FC	Flipped classroom
14	BL	Blended Learning
15	EDU	Edutainment
16	ML	Mobile learning
17	ECE	ECE
18	SIM	Simulation
19	RP	Role plays
20	SDL	Self-directed learning
21	PSM	Problem solving method
22	KL	Kinesthetic Learning
23	W	Workshops
24	GBL	Game-Based Learning
25	D-M	Demo on Model

26	LS	Library Session
27	PL	Peer learning
28	RLE	Real life experience
29	REC	Recitation
30	SY	Symposium
31	TUT	Tutorial
32	PER	Presentations
33	PT	Practical
34	XRay	X ray identification
35	CD	Case diagnosis
36	LRI	Lab report interpretation
37	DA	Drug analysis
38	D	Demonstration
39	D_BED	Demonstration bedside
40	D_L	Demonstration Lab
41	DG	Demonstration Garden
42	FV	Field visit
43	ACT	Activity
44	PRA	Practical

## Assessment

S.No	Short form	Descriptions
1	T-EMI	Theory extended matching item
2	T- EW	Theory Essay writing
3	T- MEQs	Theory MEQs
4	T-CRQs	Theory CRQs
5	T-CS	Theory case study
6	T-OBT	Theory open book test
7	P-VIVA	Practical Viva
8	P-REC	Practical Recitation
9	P-EXAM	Practical exam
10	PRN	Presentation
11	P-PRF	Practical Performance
12	P-SUR	Practical Survey
13	P-EN	Practical enact
14	P-RP	Practical Role play
15	P-MOD	Practical Model
16	P-POS	Practical Poster
17	P-CASE	Practical Case taking
18	P-ID	Practical identification
19	P-PS	Practical Problem solving
20	QZ	Quiz
21	PUZ	Puzzles
22	CL-PR	Class Presentation,
23	DEB	Debate
24	WP	Word puzzle
25	O-QZ	Online quiz

26	O-GAME	Online game-based assessment
27	M-MOD	Making of Model
28	M-CHT	Making of Charts
29	M-POS	Making of Posters
30	C-INT	Conducting interview
31	INT	Interactions
32	CR-RED	Critical reading papers
33	CR-W	Creativity Writing
34	C-VC	Clinical video cases,
35	SP	Simulated patients
36	PM	Patient management problems
37	CHK	Checklists
38	OSCE	OSCE
39	OSPE	OSPE,
40	Mini-CEX	Mini-CEX
41	DOPS	DOPS
42	CWS	CWS
43	RS	Rating scales
44	RK	Record keeping
45	COM	Compilations
46	Portfolios	Portfolios
47	Log book	Log book
48	TR	Trainers report
49	SA	Self-assessment
50	PA	Peer assessment
51	360D	360-degree evaluation
52	NFE	Not for exam