

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)

1. SIDDHA MARUTHUVA ADIPPADAI THATHUVANGALUM VARALAARUM (HISTORY & FUNDAMENTAL PRINCIPLES OF SIDDHA MEDICINE)

Total Hours : 150

I. Three primordial, eternal entities and their siddhaanthic theories (Pathi, Pasu, Paasam).

(1) Pathi (Almighty): (5 hours)

a) Definition and description of Pathi, existence of Pathi based on Epistemology (Alavai).

b) Nine divine manifestations of Pathi (Thirumenikal). i.e.

1) Sivam 2) Sakthi 3) Naatham 4) Vindhu 5) Sadaasivam 6) Maheswaran 7) Ayan 8) Ari 9) Aran.

c) Five divine powers of Pathi:-

1) Paraasakthi 2) Aadhisakthi 3) Gnaana Sakthi 4) Itchaa Sakthi 5) Kriyaasakthi. d) Study of cosmic play (Thirukoothu).

(2) Pasu (Soul): (5 hours)

Definition and description of Pasu,

i.e., distinction between pathi and pasu - three kinds of soul - seven kinds of creation - four kinds of birth - Tholkaappiyer's classification based on senses.

(3) Paasam (Bondages): (5 hours)

Definition, description and classification

i.e., Aanavam, Kanmam, Maayai and

Thriodaanam Classification of Maayai:-

1) Sutha Maayai: (Siva thathuvam) -5, Pure evolutes of Maayai: Sivam - Sakthi - Sadaasivam - Easwara - Sudhavidhai.

2) Asutha Maayai: (Vidyaa thathuvam) - 7 - Impure evolutes of Maayai: Kaalam - Niyathi - Kalai - Araagam - Vidhai - Puruden - Maayai.

3) Prakruthi Maayai: (Aanma Thathuvam) – 24, peculiar properties of soul: Thanmathirais -5, Bootham -5, Gnana indriyam -5, Kanmendriyam-5, Anthakaranam- 4.

II. Deekai (Initiation towards the highest goal of life). (5 hours)

a) Samaya Deekai b) Vishesha Deekai c) Niruvaana Deekai.

III. Epistemology (Alavai) - 10 types. Clinical Application – 5 Examples. (10 hours)

1) Perception (kaandal), 2) Inference (Karuthal), 3) Testimony (Urai), 4) Non-existence (Abaavam), 5) Deduction (Porul), 6) Analogy (Oppu), 7) Inference by exception (Ozhibu), 8) Co-existence (Unmai), 9) Tradition (Iytheekam), 10) Natural inference (Iyalbu).

IV. Different schools of thought regarding the creation of Universe - (5 hours)

Relation between macrocosm and microcosm (Andathil Ullathe Pindam).

V. Five element theory (Iymbootha Kolgai). (5 hours)

Creation of five elements - Properties of five elements - fivefold combination and its

description (Panchabootha Panchikaranam) - application of five element theory in Siddha treatment aspect.

VI. 96 Fundamental Principles (Thathuvams) and its different concepts (15

hours) Sivaprakaasa Kattalai - Thirualavai Kattalai - Siddhaanta Kattalai - Vedaantha Kattalai - Thathuva Deepikai - Yugimuni's concept.

Bootham - 5 (five elements) - Pori - 5 (Sense organs) - Pulan - 5 (Perception by the sense organs) - Kanmendriyam - 5 (Motor organs) - Gnana Indriyam - 5 (The inner mechanism responsible for the perception of five senses) - Karanam – 4 (four intellectual faculties) - Arivu - 1 (Self-realization) - Naadi - 10 (Vital channel) - Vaayu - 10 (Vital forces) - Aasayam - 5 (Visceral cavities) - Kosam - 5 (fivesheeths) - Aathaaram - 6 (Six stations of soul) - Mandalam - 3 (Three regions) - Malam 3 (Three principles of moral evil) - Thodam – 3 (Three humours) - Eadanai - 3 (Three physical bindings) - Gunam - 3 (Three cosmic qualities) - Vinai - 2 (Acts) - Raagam - 8 (Eight passions) - Avasthai - 5 (Five states of consciousness).

VII. Three humoral theory (Uyir Thaathukkal) : (15 hours)

Vali, Azhal and Iyam.

Predominant locations - Properties - Physiological functions - Abnormal functions - Increased and decreased features

VIII. Seven Physical constituents (Udal Kattukal) : (5 hours)

Saaram (Primary nourishing juice) - Chenneer (blood) - Oon (muscle) - Kozhuppu (fat) - Enbu (Bone) - Moolai (Bone marrow) - Suckilam / Suronitham (Sperm / Ovum).

Description about 7 physical constituents i.e., Normal function, increased and decreased features.

IX . Five basic properties of Drug: (5 hours)

Suvai (Taste) - Gunam (Characters) - Veeriyam (Potency) - Vibaavam (post absorptive tastes) - Prabaavam (Specific action).

Taste- relations with five elements- features of imbalanced intake of six tastes. Maruthugalin vagaipaadugal with examples

X. Definition and description of the following:- (15 hours)

1. Attamaa Sithigal
2. Thirukkural (Marunthu Athikaram)
3. Rasavaatham (Alchemy).
4. Muppu.
5. Kaayakalpam (Elixir Science).

XI. History of Tamil Nadu including three Tamil Academies & Ancient Religious Traditions of Tamils (Arusamaiyakolgai) (10 hours)

XII. Chuvadi Iyal.

A. MANUSCRIPTOLOGY (20

hours)

1. Introduction to Manuscriptology

2. History of Editing Palm leaf Manuscripts with special reference to Tamil
3. Palm leaf Manuscripts and Paper Manuscripts Editing
4. Application of Computer in Editing

B. EDITING

(15

hours)

1. Basics of Book Editing
2. History of Book publishing with special reference to Tamil
3. Proof Reading - Lay out
4. Book Production
5. Use of Computer in Editing

C. PROJECT WORK

Candidates shall have to undertake a field work regarding copying of Inscriptions or Editing a Palm leaf Manuscript or Editing a Paper Manuscript. The project work has to be submitted to the Head of the Department.

XIII. History of Siddhars:-

(5

hours)

Agasthiyar - Thirumoolar - Theraiyar - Yugimuni - Bohar - Sattamuni - Nandhidevar - Raamadevar - Dhanvanthri – Konganavar - Karuvoorar - Kaalanganadhar - Pulippaani - Paampaatti Siddhar - Macchamuni - Romarishi - Koorakkar - Idaikaadar - Sundaraanandhar - Thiruvalluvar - Agappei Siddhar - Kuthambai Siddhar – Sivavaakkhar - Azhuganni Siddhar - Pulathiar.

XIV. Attaanga Yogam:-

(5 hours)

Iyamam - Niyamam - Aasanam - Pranaayaamam - Prathiyaakaram - Dhaaranai - Dhiyaanam - Samaadhi.

XV. Encyclopaedia of Siddha Medicine

(5

hours)

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Thotrakirama Araichiyum Siddha Maruthuva Varalarum, (Tamil), The Directorate of Indian Medicine and Homoeopathy, Govt. of Tamilnadu, Chennai. (2005)	Dr.K.S.Uttamarayan, H.P.I.M,
2.	Siddha Maruthuvanga Churukkam (Tamil), The Directorate of Indian Medicine and Homoeopathy, Chennai (2005)	Dr.K.S.Uttamarayan, H.P.I.M,
3.	Siddha Maruthuva Varalaru, (Tamil), International Institute of Tamil Studies, Chennai (2008)	Anaivari Ananthan
4.	Thenindhiya Maruthuva Varalaru, (Tamil) International Institute of Tamil Studies, Chennai (2008)	Ra. Niranjana Devi
5.	Suvatiyiyal (Tamil) International Institute of Tamil Studies, Chennai (1991)	Dr. P. Subramanian
6.	Fundamentals of manuscriptology, (English), Thiruvananthapuram Dravidian linguistics association	Visalakshy, P.

	(2003).	
7.	Introduction to Manuscriptology, (English), Sharada Publishing House, Delhi 1996.	R S Shiva Ganeshamurthy
8.	Siddha Medical Manuscripts in Tamil, (English), International Institute of Tamil Studies, Chennai (1984)	Madhavan. V.R
9.	Thamizhil maruthuva ilakiyangal – or aaivu (Tamil) Poonkodi Publications, Chennai	Dr. R. Vaasudevan
10.	Pandai thamizhaga varaivukalum kuriyeedukalum (Tamil) International Institute of Tamil Studies, Chennai (2004)	Raasu. Pavunthurai
11.	Aasivagam Ennum Tamizhar Anuviyam (Tamil) Manitam Pathipagam, Trichy-21 (2013)	Neduncheliyan K
12.	Thamilar Varalaaru, (Tamil) Thamilmann Pathippagam, Chennai (2000)	Thevaneya Paavaanar
13.	Siddha Maruthuva Moola Thathuvam (Tamil) Sidha Maruthuvam Valarchi Kazhagam, Jaffna, Srilanka (2002)	S. Sivashanmuga raja
14.	Siddha Dossier, CCRS, Dept. of AYUSH, New Delhi (2013)	-

Online Material

1. Tamil Maruthuva Varalattu Thonmaikal, Munaivar R. Vasudevan
<http://ta.wikisource.org/s/bn>
2. Suvadi Iyal Arimukam
http://kovaimani-tamilmanuscriptology.blogspot.in/2012_04_01_archive.html
3. Oolai chuvadi Aaivukal- Prof. Dr. R. Madhavan
<http://www.tamilheritage.org/manulogy/madavan.html>
4. Religious Traditions of the Tamils (Prof. A. Velupillai)
<http://tamilelibrary.org/teli2/archives/19>

Other resources

DVD

Historical Atlas of South India : a joint effort of French Institute of Pondicherry and the Tamil University, Thanjavur Reference URL: <http://www.ifpindia.org/histatlas/>

Distribution of Marks (Mark Weightage) for University Theory Examination

Chapter – I	15 Marks
Chapter – II, III & IV	15 Marks
Chapter – V & VI	20 Marks
Chapter – VII & VIII	15 Marks
Chapter – IX & X	20 Marks

Chapter – XI, XIII & XIV

15 Marks

Total

100 Marks

Note: Questions should not be framed from the chapters XII & XV since they are practical training oriented topics.

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (NEW SCHEME 2013)

2. TAMIL LANGUAGE

Total Hours : 100

Objective:

To acquire knowledge to understand the contents that is available in classical Tamil Siddha literature.

COURSE CONTENT AND SYLLABUS

Unit : 1 Exercises and drills in the spoken and written variety **(4 hours)**

- a) Alphabets in Tamil
- b) An intensive course in Tamil, CIIL – MYSORE – by Dr.S. Rajaram
- c) Subhranian V.I. & Veeraswamy T.V., 1973, "Intensive course in Tamil",
Dravidian Linguistics Association, Thumba, Trivandrum.

Unit : 2 Exercise for Pronunciation **(10 hours)**

- a) Tamil alphabets – Classification – Special features – Maththirai (Syllabi)
- b) Tamil Words – Loan words – its written form – common words in Tamil and
Regional language(viz. Malayalam)

Unit : 3 Formation of words and sentences and study of Basic grammer on the functional
level **(15 hours)**

- a) Chol (word) – Peyar (Name), Vinai (Verb), Idai (clitics) etc.(Peyar (Name) –
Gender, number & case; Vinai (Verb)- Kaalam (Tense) Orumai (Singular),
Panmai (Plural)
- b) Thodar (syntax)/Vaakkiam (Sentence), Kaalam (Tense), Orumai (Singular),
Panmai (Plural), Ezhuvaai (Subject), Payanilai (Predicate), Cheyappaduporul
(Object). (It is to understand the language structure).
- c) Selected Tamil Proverbs (10)

Unit : 4 Study of selected prose and poetry in Tamil and Siddha literature

POETRY

(24 hours)

(Poems selected only for reading meaningfully and for memorising)

- a) Name of the book : Malarum maalaiyum
Author : Kavimani
Title : Pasuvum kantrum
Lines : Thottathil meythu
.....kantrukkuty. (2 stanzas)
- b) Pieces from Folk songs (Tamil)
1) Padaku 2) Elelankadi Elelo
- c) Name of the book : Bhaarathiyaar kavithaikal
Author : Subramaniya Bhaarathiyaar
Title : Paappaa paattu
Lines : Odi vilayadu pappa

-Vazhakkappaduthikkollu pappu (6 stanzas)
- d) Title : Kontrai venthan (15 Lines)
Author : Auvaiyaar
- e) Name of the book : Thirukkural
Author : Thiruvalluvar
Title : “Marunthu” Athikaram (10 verses)
- f) Name of the book : Maruthuva vatha yoga gnana satthiram
Lines : “ Aathikaalathilae thillayilae
.....chernthaner emaiikkaakavae”
- g) Name of the book : Yugi chinthaamani
Lines : “
Uruthiyam poothathi
.....uraikkak kelae”
- h) Name of the book : Chithar Padalkal
Author : Kovinthan
Lines : Thunaichiru..... (27)
“Ettumalai.....” (28)
- i) Name of the book : Thirumanthiram
Author : Thirumoolar
Title : Marunthu
: “ Maruppathu udal noi.....
.....marunthenalamae”
- j) Name of the book : Siddha Maruthuva Chirappu
Author : Dr. R. Thiagarajan
Title : Ashtanka yokam
Lines : “Eyama
.....maavathumaame”
- k) Name of the book : Siddha Maruthuvaanka Churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : Udal Aimpoothakoorupaattaiyum Udaiyathu Enal.
Lines : “Paarappa.....
.....Lapamatha Mohamacham”
- l) Name of the book : Siddha maruthuvanka churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : Iympootham – Arusuvai thodarpu
Lines : “Mannudane
.....uraittha maraiye”
- m) Name of the book : Siddha maruthuvanka churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : Pathinaanku Vekangal
Lines : “Pathinaanku.....
:swasamaame”

PROSE

(21 hours)

- a) Name of the book : Siddharkal charithram

- Author : Chollin selvan
Chapter : Brahmamuni, Korakkar
- b) Name of the book : “Lemuria allathu Kumari Kandam”
Chapter : Kumari nadu pattriya Tamil nool kurippukal
Author : Panmozhi pulavar K.Appathurai.
- c) Name of the book : Pattukkottai Kaliyana Sundaram Padalkal
Author : KunRakkudi Adikalaar
Chapter : Preface of Pattukkottai kaliyana Sundaram Padalkal
- d) Name of the book : Nalla Theerppu
(An eloquent speech of C.N. Anna Durai)

Unit : 5 Study of History of siddha medicine – Selected portion from the Siddha literature. **(20 hours)**

Siddharkal enpor yaar?- Pathinen Siddharkal – Navanaatha Siddharkal – Siddha Maruthuvathin Chirappukkal – Siddha Maruthuva Varalaru in brief – Iyankum Porudkalum Iyankaa Porudkalum.(who are Siddhars’; Eighteen Siddhars – Navanatha Siddhars – The importance of Siddha medical practices- Brief history of Siddha medical practices – movable and immovable things)

Unit : 6 Exercises in narration / description of a story or an event in a paragraph. **(3 hours)**

Unit : 7 Translation from Tamil to Regional language or English – and Vice versa. **(3 hours)**

References Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Thottakkirama aaraichiyum maruthuva varalaarum.	Dr. Uthamarayan
2.	Siddha maruthuvanga churukkam.	Dr. Uthamarayan
3.	Siddha vaidhya thirattu.	Dr. Uthamarayan
4.	Pathinen siddhargal varalarum Padaitha noolgalum.	Murugesan
5.	Siddhargal, Thamarai noolagam, Chennai – 26.	-

Distribution of Marks (Mark Weightage) for University Theory Examination

Unit – I, II & III	5 Marks
Unit – IV Poetry	30 Marks
Unit – IV Prose	25 Marks
Unit – V	30 Marks
Unit – VI	5 Marks
Unit – VII	5 Marks
Total	100 Marks

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)

4. UYIR VEDHIYAL (BIOCHEMISTRY)

Total Hours : 150

1. Chemistry of Carbohydrates: (9 hours)

Functions of Carbohydrates, Classification of Carbohydrates, Classification and biomedical importance of monosaccharides, Reactions of monosaccharides, Classification and biomedical importance of disaccharides, Polysaccharides- Classification, composition and function.

2. Chemistry of Lipids: (8 hours)

Functions of Lipids, Classification of Lipids, Classification of fatty acids, Essential fatty acids, Free radicals and antioxidants, Types and functions of phospholipids, Glycolipids and lipo proteins, Steroids, Micelles , Names and functions of eicosanoids.

3. Chemistry of Proteins : (11 hours)

Functions of proteins, Classification of proteins based on chemical nature and solubility, classification of amino acids based on structure, Structure of proteins primary, secondary , tertiary and quaternary. Biologically important peptides. Plasma proteins: Types and major functions, the complement system.

4. Nucleic acids and Biotechnology: (8 hours)

Watson and cricks structure of DNA, Types and functions of RNA, structure of transfer RNA, Replication of DNA, Definition of transcription, Polymerase chain reaction (PCR), - Principle, technique, applications. Human genome project, Bioinformatics.

5. Purine nucleotides: (4 hours)

Degradation of purine nucleotides, Gout.

6. Metabolism of carbohydrates: (10 hours)

Glycolysis, TCA cycle, HMP shunt pathway, Glycogenesis, glycogenolysis, and Gluconeogenesis. Glucose homeostasis, Diabetes mellitus.

7. Metabolism of proteins: (6 hours)

Transamination, deamination and urea cycle. Biosynthesis of proteins (Translation).

8. Metabolism of Lipids: (9 hours)

Fatty acid oxidation, Ketone bodies, Ketosis. Biosynthesis of fatty acids, Biosynthesis of cholesterol, Degradation of cholesterol, Hypercholesterolemia, Metabolism of HDL, Fatty liver, Obesity.

9. Biological oxidation (8 hours)

Classification of high energy compounds, ATP-ADP cycle, oxidative phosphorylation and electron transport chain, substrate level phosphorylation.

10. Enzymes: (9 hours)

Classification, Factors affecting enzyme activity, Active site, Mechanism of enzyme action, Coenzymes, Diagnostic importance of enzymes, Enzyme pattern in diseases.

11. Digestion and absorption of carbohydrates, proteins and lipids. (8 hours)

- 12. Haemoglobin:** (5 hours)
Structure of haemoglobin, Biosynthesis of heme, Degradation of heme. Clinical significance of Glycosylated Haemoglobin, Jaundice
- 13. Vitamins:** (9 hours)
Fat soluble Vitamins and Water soluble vitamins –food source, RDA, biochemical functions and deficiency manifestations.
- 14. Hormones: Biochemical functions and disorders.** (9 hours)
- 15. Minerals:** (9 hours)
Macro Elements and Micro Elements–food source, RDA, biochemical functions and deficiency manifestations.
- 16. Metabolism of Xenobiotics (Detoxification).** (3 hours)
- 17. Water and electrolytes:** (5 hours)
Functions of water, water turn over and balance, Composition of electrolytes in the body fluids.
- 18. Nutrition:** (7 hours)
Calorie value of food stuffs, Basal metabolic rate, Specific dynamic action, Fibre in nutrition, Balanced diet, protein – Energy malnutrition, Energy requirements.
- 19. Cancer and AIDS:** (5 hours)
Cancer – Etiology and tumour markers. AIDS – Transmission of HIV and Lab Diagnosis.
- 20. Organ function tests:** (8 hours)
Liver function tests, Renal function tests, Thyroid function tests.

PRACTICAL

Total Hours : 100

- PART A. Qualitative Analysis:-** (26 hours)
- I. Reactions of carbohydrates -**
1. Reactions of Glucose.
 2. Reactions of Fructose.
 3. Reactions of Maltose.
 4. Reactions of Lactose.
 5. Reactions of Sucrose.
 6. Reactions of Starch.
- II. Reactions of Protein -**
1. Reactions of Albumin.
 2. Reactions of Peptone.
 3. Reactions of Gelatin.
 4. Reactions of Casein.
- III. Reactions of non protein nitrogenous substances – urea, uric acid, creatinine.**
- IV. Reactions of Normal Urine.**

V. Analysis of abnormal urine.

PART B. QUANTITATIVE ANALYSIS

(48 hours)

1. Estimation of Blood Sugar.
2. Estimation of serum total proteins.
3. Estimation of serum cholesterol.
4. Estimation of serum triglycerides.
5. Estimation of serum urea.
6. Estimation of serum uric acid.
7. Estimation of serum creatinine.
8. Estimation of serum bilirubin.
9. Estimation of serum inorganic phosphate.
10. Estimation of serum amylase.
11. Estimation of SGOT.
12. Estimation of SGPT.

PART C: DEMONSTRATION

(6 hours)

1. Glucose Tolerance Test with graph (Normal and Abnormal).
2. Paper electrophoresis.
3. Paper chromatography.

PART D: SPOTTERS

(10 hours)

1. Calorimeter
2. PH meter
3. Haemoglobinometer
4. Rhyles tube.
5. Spectroscope
6. Centrifuge
7. Electrophoresis
8. Chromatography
9. Osazones
10. Semi auto analyzer

PART E: CASE REPORTS

(10 hours)

1. GTT Graph
2. Renal Glycosuria
3. Acute myocardial infraction
4. Jaundice
5. Gout
6. Hyperthyroidism
7. Vitamin D deficiency
8. Renal failure
9. Kwashiorkor
10. Hypercholesterolemia.

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Biochemistry	U.Satyanarayana, U.Chakrapani
2.	Text book of biochemistry	D.M. Vasudevan, Sreekumari. S
3.	Biochemistry	Pankaja Naik
4.	Harper's Illustrated Bio - Chemistry	
5.	Manual of practical medical biochemistry	Evangeline Jones. M.D.
6.	Practical text book of biochemistry	D.M. Vasudevan, Subir Kumar das

Distribution of Marks (Mark Weightage) for University Theory Examination

Chapter – 1, 2, 3, 5, 6, 7, 8	25 Marks
Chapter – 4	5 Marks
Chapter – 9	5 Marks
Chapter – 10, 14 & 20	20 Marks
Chapter – 11	5 Marks
Chapter – 12	5 Marks
Chapter – 13, 15, 17 & 18	25 Marks
Chapter – 16 & 19	10 Marks
Total	100 Marks

Distribution of Marks for University Practical Examination

Practical	70 Marks
Viva Voce	20 Marks
Record	10 Marks
Total	100 Marks

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)
5. MARUTHUVA THAVARAIYAL (MEDICINAL BOTANY AND PHARMACOGNOSY)

THEORY:

Total Hours : 200

MEDICINAL BOTANY

Unit - I:

(25 hours)

Definition - History and importance of Medicinal plants in Siddha science.

Plant biology and Medicinal uses of the following groups: Thallophytes, Bryophytes, Pteridophytes and Gymnosperms.

Study of Life-cycle of the following: Gracilaria, Penicillium, Parmelia and Dryopteris.

Unit -II:

(35 hours)

Taxonomy of Angiosperms- Natural system of classification (Bentham and Hooker)

Herbarium Techniques

Diagnostic vegetative and Reproductive characters, Active principles and Pharmacological constituents of most used plants of the following families:

1. Ranunculaceae
2. Annonaceae
3. Menispermaceae
4. Capparaceae
5. Malvaceae
6. Zygophyllaceae
7. Rutaceae
8. Meliaceae
9. Fabaceae
10. Caesalpiniaceae
11. Mimosaceae
12. Combretaceae
13. Myrtaceae
14. Cucurbitaceae
15. Apiaceae
16. Rubiaceae
17. Asteraceae
18. Apocynaceae
19. Asclepiadaceae
20. Convolvulaceae
21. Solanaceae
22. Acanthaceae
23. Lamiaceae
24. Nyctaginaceae
25. Amaranthaceae
26. Aristolochiaceae
27. Euphorbiaceae
28. Zingiberaceae
29. Liliaceae
30. Poaceae

Unit – III:

(30 hours)

Plant Anatomy: Idealised plant cell structure, cell organelles and cell inclusion.

Study of following anatomical structures Dicot leaf, stem and root, Monocot leaf, stem and root.

Unit – IV: (25 hours)
 Plant Ecology - Plants in relation to environment - Hydrophytes, Mesophytes, Xerophytes and Halophytes.
 Conservation of extant and endangered medicinal plants.
 Plant tissue culture - culture methods - callus initiation - laboratory organization.
 Detailed study on phytochemical production in tissue culture methods.
 Maintenance of herbal gardens.

PHARMACOGNOSY

Unit-I: (30 hours)
 Study of organized raw drugs based on their morphology:
 Roots and Rhizomes
 Woods
 Barks and Galls
 Leaves
 Flowers
 Fruits
 Seeds
 Whole plant

Unit -II: (15 hours)
 Study of unorganized raw drugs:
 Gums
 Resins and types
 Fixed oils

Unit –III: (20 hours)
 Phytochemistry (pharmacological actions of the following)
 Glycosides-Anthroquinone, Cardiac and Saponins
 Alkaloids-Tropane, Quinoline and Indole
 Tannins-Hydrolysable and Condensed
 Volatile oils-Obtained from the various plant parts
 Pigmentation studies-Chlorophyll, Xanthophyll, A.nthocyanin

Unit-IV: (20 hours)
 Adulteration of rawdrugs & detection. Poisonous plants. Basics of Herbal drug standardization.

PRACTICALS: Total Hours : 100

1. Microscopic slides observation of the non-flowering plant genera mentioned in Unit-I. (10 hours)
2. Identification of Angiosperm families given in Unit II. (20 hours)
3. Field study of various medicinal plants in their original habitat and pigment studies. (15 hours)
4. Submission of Herbarium (20 sheets) & Raw drugs (30). (14 hours)
5. Pigment studies - By paper chromatography method. (3 hours)
6. Anatomical study of plant parts — by section method mentioned in Unit III. (12 hours)
7. Plant Ecology - adaptation - Macroscopic & Microscopic mentioned in Unit IV. (10 hours)
8. Raw Drugs - Identification. (16 hours)

References Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	College botany vol. I, II, III, Ed. 2000, New Central Book Agency Pvt Ltd.	Gangulee et al.
2.	Outlines of Botany,. Ed. 2003, S. Viswanathan Publishers.	V. Narayanaswamy et. al.
3.	Plant Ecology, S. Chand & Co.	Sharma
4.	A Text Book of Botany - Angiosperms, Rastogi Publishers, Meerut.	V. Singh, Pande & Jain
5.	Medicinal Botany Vol-I&II (Tamil) - Elangovan Publishers.	Somasundaram
6.	Medical Taxonomy of Angiosperms. Recent trends in Medical used and Chemical constituents. Harishi Publication, Chennai.	S. Shankaranarayanan
7.	Taxonomy of Angiosperms (Tamil) V.K. Publishing House, Chennai	S. Pazhaniyappan
8.	Elements of Biotechnology, Rastogi & Company.	P.K. Gupta
9.	Text Book of Pharmacognosy, Nirali Prakashan, Pune.	Gokhale et. al.
10.	Practical Pharmacognosy, Vallabh Prakasham, Delhi – 34.	Dr. C.K. Koate.

Distribution of Marks (Mark Weightage) for University Theory**Examination****Medicinal Botany**

Unit – I	25 Marks
Unit – II	15 Marks
Unit – III	5 Marks
Unit – IV	15 Marks

Pharmacognosy

Unit – I	10 Marks
Unit –II	10 Marks
Unit –III	10 Marks
Unit –IV	10 Marks

Total	100 Marks
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Distribution of Marks for University Practical Examination

Practical	70 Marks
Viva Voce	20 Marks
Record	10 Marks

Total	100 Marks
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SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)

6. NUNNUYIRIYAL (MICROBIOLOGY)

Total Hours : 100
(15 hours)

General Bacteriology

1. Introduction and History
2. Morphology of Bacteria
3. Growth and Nutrition of Bacteria
4. Classification and Identification of Bacteria
5. Culture media and cultivation methods
6. Sterilization and disinfection
7. Antimicrobial sensitivity

Systemic Bacteriology

(30 hours)

1. Gram Positive Cocci - Staphylococcus, Streptococcus, Pneumococcus & Enterococcus
2. Gram Negative Cocci - Meningococci and Gonococci
3. Enterobacteriaceae - Escherichia, Klebsiella, Proteus, Salmonella and Shigella
4. Vibrio cholerae, Pseudomonas, Haemophilus
5. Clostridium tetani, C.perfringens, C.botulinum
6. Bacillus anthracis
7. Corenebacterium diphtheriae
8. Mycobacterium - Tuberculosis and Leprosy
9. Spirochaetes - Treponema & Leptospira
10. Mycoplasma, Chlamydiae & Rickettsiae

Immunology

(20 hours)

1. Infection
2. Structure and function of immune system
3. Immunity
4. Antigens
5. Antibodies
6. Antigen - antibody reaction - Agglutination, Precipitation, Immunofluorescence, Coomb's Test, ELISA, Western blot
7. Complement system
8. Hypersensitivity
9. Auto-immunity

Mycology

(5 hours)

1. Opportunistic Mycosis
2. Dermatophytes
3. Cryptococcus, Rhinosporidium and Histoplasma
4. Mycotoxicosis and Mycetism

Virology

(20 hours)

1. General properties and cultivation of Virus
2. Bacteriophage
3. Pox virus
4. Herpes virus - HSV-I &II
5. Myxovirus - H1N1, Avian flu, Mumps and Measles
6. Corona virus — SARS

7. Polio virus
8. Rabies virus
9. Hepatitis virus (A, B & C)
10. Arbo virus - Chikungunya, Dengue & Rubella
11. Retro virus - HIV

Clinical Microbiology

(10 hours)

1. Nosocomial infection
2. UTI
3. Meningitis
4. Bacterial food poisoning
5. PUO
6. Biomedical waste management
7. Vaccines (Bacterial & Viral)

Practical

Total Hours : 100

- | | |
|---|-------------------|
| 1. Microscopy - Light, Dark Ground, Fluorescent, Electron | (6 hours) |
| 2. Staining - Gram's and AFB staining. | (15 hours) |
| 3. Culture methods - Streak plate, Anaerobic, RCM. | (11 hours) |
| 4. Bacterial identification - Esch.coli, Klebsiella, Pseudomonas, Vibrio cholerae, Corynebacterium, diphtheriae, Staphylococcus aureus. | (45 hours) |
| 5. Serology - WIDAL & VDRL with clinical significance. | (4 hours) |
| 6. Immunology — ELISA, Latex agglutination. | (6 hours) |
| 7. Mycology - LPCB mounting. | (6 hours) |
| 8. Viral model - Rabies, HIV, Orthomyxo & Adeno virus. | (7 hours) |

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Text Book of Microbiology	Ananthanarayan and C.K. Jayaram Paniker
2.	Text Book of Microbiology	D.R. Arora and B Arora
3.	Medical Microbiology	Robert Cruik Shank

Distribution of Marks (Mark Weightage) for University Theory

Examination

General Bacteriology	20 Marks
Systemic Bacteriology	25 Marks
Immunology	15 Marks
Mycology	10 Marks
Virology	20 Marks
Clinical Microbiology	10 Marks
Total	100 Marks

Distribution of Marks for University Practical Examination

Practical	70 Marks
Viva Voce	20 Marks
Record	10 Marks
Total	100 Marks

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)

1. SIDDHA MARUTHUVA ADIPPADAI THATHUVANGALUM VARALAARUM (HISTORY & FUNDAMENTAL PRINCIPLES OF SIDDHA MEDICINE)

Total Hours : 150

I. Three primordial, eternal entities and their siddhaanthic theories (Pathi, Pasu, Paasam).

(1) Pathi (Almighty): **(5 hours)**

a) Definition and description of Pathi, existence of Pathi based on Epistemology (Alavai).

b) Nine divine manifestations of Pathi (Thirumenikal). i.e.

1) Sivam 2) Sakthi 3) Naatham 4) Vindhu 5) Sadaasivam 6) Maheswaran 7) Ayan 8) Ari

9) Aran.

c) Five divine powers of Pathi:-

1) Paraasakthi 2) Aadhisakthi 3) Gnaana Sakthi 4) Itchaa Sakthi 5)

Kriyaasakthi. d) Study of cosmic play (Thirukoothu).

(2) Pasu (Soul): **(5 hours)**

Definition and description of Pasu,

i.e., distinction between pathi and pasu - three kinds of soul - seven kinds of creation - four kinds of birth - Tholkaappiyer's classification based on senses.

(3) Paasam (Bondages): **(5 hours)**

Definition, description and classification

i.e., Aanavam, Kanmam, Maayai and

Thriodaanam Classification of Maayai:-

1) Sutha Maayai: (Siva thathuvam) -5, Pure evolutes of

Maayai: Sivam - Sakthi - Sadaasivam - Easwara -

Sudhavidhai.

2) Asutha Maayai: (Vidyaa thathuvam) - 7 - Impure evolutes of Maayai:

Kaalam - Niyathi - Kalai - Araagam - Vidhai - Puruden - Maayai.

3) Prakruthi Maayai: (Aanma Thathuvam) – 24, peculiar properties of soul:

Thanmathirais -5, Bootham -5, Gnana indriyam -5, Kanmendriyam-5,

Anthakaranam- 4.

II. Deekai (Initiation towards the highest goal of life). **(5 hours)**

a) Samaya Deekai b) Vishesha Deekai c) Niruvaana Deekai.

III. Epistemology (Alavai) - 10 types. Clinical Application – 5 Examples. **(10 hours)**

1) Perception (kaandal), 2) Inference (Karuthal), 3) Testimony (Urai), 4) Non-existence

(Abaavam), 5) Deduction (Porul), 6) Analogy (Oppu), 7) Inference by exception (Ozhibu),

8) Co-existence (Unmai), 9) Tradition (Iytheekam), 10) Natural inference (Iyalbu).

IV. Different schools of thought regarding the creation of Universe - **(5 hours)**

Relation between macrocosm and microcosm (Andathil Ullathe Pindam).

V. Five element theory (lymbootha Kolgai). **(5 hours)**

Creation of five elements - Properties of five elements - fivefold combination and its description (Panchabootha Panchikaranam) - application of five element theory in

Siddha treatment aspect.

VI. 96 Fundamental Principles (Thathuvams) and its different concepts (15 hours)

Sivaprakaasa Kattalai - Thirualavai Kattalai - Siddhaanta Kattalai - Vedaantha Kattalai - Thathuva Deepikai - Yugimuni's concept.

Bootham - 5 (five elements) - Pori - 5 (Sense organs) - Pulan - 5 (Perception by the sense organs) - Kanmendriyam - 5 (Motor organs) - Gnana Indriyam - 5 (The inner mechanism responsible for the perception of five senses) - Karanam – 4 (four intellectual faculties) - Arivu - 1 (Self-realization) - Naadi - 10 (Vital channel) - Vaayu - 10 (Vital forces) - Aasayam - 5 (Visceral cavities) - Kosam - 5 (fivesheeths) - Aathaaram - 6 (Six stations of soul) - Mandalam - 3 (Three regions) - Malam 3 (Three principles of moral evil) - Thodam – 3 (Three humours) - Eadanai - 3 (Three physical bindings) - Gunam - 3 (Three cosmic qualities) - Vinai - 2 (Acts) - Raagam - 8 (Eight passions) - Avasthai - 5 (Five states of consciousness).

VII. Three humoural theory (Uyir Thaathukkal) : (15 hours)

Vali, Azhal and Iyam.

Predominant locations - Properties - Physiological functions - Abnormal functions - Increased and decreased features

VIII. Seven Physical constituents (Udal Kattukal) : (5 hours)

Saaram (Primary nourishing juice) - Chenneer (blood) - Oon (muscle) - Kozhuppu (fat) - Enbu (Bone) - Moolai (Bone marrow) - Suckilam / Suronitham (Sperm / Ovum).

Description about 7 physical constituents i.e., Normal function, increased and decreased features.

IX . Five basic properties of Drug: (5 hours)

Suvai (Taste) - Gunam (Characters) - Veeriyam (Potency) - Vibaavam (post absorptive tastes) - Prabaavam (Specific action).

Taste- relations with five elements- features of imbalanced intake of six tastes. Maruthugalin vagaipaadugal with examples

X. Definition and description of the following:- (15 hours)

1. Attamaa Sithigal
2. Thirukkural (Marunthu Athikaram)
3. Rasavaatham (Alchemy).
4. Muppu.
5. Kaayakalpam (Elixir Science).

XI. History of Tamil Nadu including three Tamil Academies & Ancient Religious Traditions of Tamils (Arusamaiyakolgai) (10 hours)

XII. Chuvadi Iyal.

A. MANUSCRIPTOLOGY (20 hours)

1. Introduction to Manuscriptology
2. History of Editing Palm leaf Manuscripts with special reference to Tamil
3. Palm leaf Manuscripts and Paper Manuscripts Editing
4. Application of Computer in Editing

B. EDITING (15 hours)

1. Basics of Book Editing
2. History of Book publishing with special reference to Tamil

3. Proof Reading - Lay out
4. Book Production
5. Use of Computer in Editing

C. PROJECT WORK

Candidates shall have to undertake a field work regarding copying of Inscriptions or Editing a Palm leaf Manuscript or Editing a Paper Manuscript. The project work has to be submitted to the Head of the Department.

XIII. History of Siddhars:- (5 hours)

Agasthiyar - Thirumoolar - Theraiyar - Yugimuni - Bohar - Sattamuni - Nandhidevar - Raamadevar - Dhanvanthri – Konganavar - Karuvorar - Kaalanganadhar - Pulippaani - Paampaatti Siddhar - Macchamuni - Romarishi - Koorakkar - Idaikaadar - Sundaraanandhar - Thiruvalluvar - Agappei Siddhar - Kuthambai Siddhar – Sivavaakkiaar - Azhuganni Siddhar - Pulathiar.

XIV. Attaanga Yogam:- (5 hours)

Iyamam - Niyamam - Aasanam - Pranaayaamam - Prathiyaakaram - Dhaaranai - Dhiyaanam - Samaadhi.

XV. Encyclopaedia of Siddha Medicine (5 hours)

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Thotrakirama Araichiyum Siddha Maruthuva Varalarum, (Tamil), The Directorate of Indian Medicine and Homoeopathy, Govt. of Tamilnadu, Chennai. (2005)	Dr.K.S.Uttamarayan, H.P.I.M,
2.	Siddha Maruthuvanga Churukkam (Tamil), The Directorate of Indian Medicine and Homoeopathy, Chennai (2005)	Dr.K.S.Uttamarayan, H.P.I.M,
3.	Siddha Maruthuva Varalaru, (Tamil), International Institute of Tamil Studies, Chennai (2008)	Anaivari Ananthan
4.	Thenindhiya Maruthuva Varalaru, (Tamil) International Institute of Tamil Studies, Chennai (2008)	Ra. Niranjana Devi
5.	Suvatiyiyal (Tamil) International Institute of Tamil Studies, Chennai (1991)	Dr. P. Subramanian
6.	Fundamentals of manuscriptology, (English), Thiruvananthapuram Dravidian linguistics association (2003).	Visalakshy, P.
7.	Introduction to Manuscriptology, (English), Sharada Publishing House, Delhi 1996.	R S Shiva Ganeshamurthy
8.	Siddha Medical Manuscripts in Tamil, (English), International Institute of Tamil Studies, Chennai (1984)	Madhavan. V.R
9.	Thamizhil maruthuva ilakiyangal – or aaiivu (Tamil) Poonkodi Publications, Chennai	Dr. R. Vaasudevan
10.	Pandai thamizhaga varaivukalum kuriyeedukalum (Tamil)	Raasu. Pavunthurai

	International Institute of Tamil Studies, Chennai (2004)	
11.	Aasivagam Ennum Tamizhar Anuviyam (Tamil) Manitam Pathipagam, Trichy-21 (2013)	Neduncheliam K
12.	Thamilar Varalaaru, (Tamil) Thamilmam Pathippagam, Chennai (2000)	Thevaneya Paavaanar
13.	Siddha Maruthuva Moola Thathuvam (Tamil) Sidha Maruthuvam Valarchi Kazhagam, Jaffna, Srilanka (2002)	S. Sivashanmuga raja
14.	Siddha Dossier, CCRS, Dept. of AYUSH, New Delhi (2013)	-

Online Material

1. Tamil Maruthuva Varalattu Thonmaikal, Munaivar R. Vasudevan
<http://ta.wikisource.org/s/bn>
2. Suvadi Iyal Arimukam
http://kovaimani-tamilmanuscriptology.blogspot.in/2012_04_01_archive.html
3. Oolai chuvadi Aaivukal- Prof. Dr. R. Madhavan
<http://www.tamilheritage.org/manulogy/madavan.html>
4. Religious Traditions of the Tamils (Prof. A. Velupillai)
<http://tamilelibrary.org/teli2/archives/19>

Other resources

DVD

Historical Atlas of South India : a joint effort of French Institute of Pondicherry and the Tamil University, Thanjavur Reference URL: <http://www.ifpindia.org/histatlas/>

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)

2. TAMIL LANGUAGE

Total Hours : 100

Objective:

To acquire knowledge to understand the contents that is available in classical Tamil Siddha literature.

COURSE CONTENT AND SYLLABUS

Unit : 1 Exercises and drills in the spoken and written variety **(4 hours)**

- Alphabets in Tamil
- An intensive course in Tamil, CIIL – MYSORE – by Dr.S. Rajaram
- Subhranian V.I. & Veeraswamy T.V., 1973, "Intensive course in Tamil", Dravidian Linguistics Association, Thumba, Trivandrum.

Unit : 2 Exercise for Pronunciation **(10 hours)**

- Tamil alphabets – Classification – Special features – Maththirai (Syllabi)
- Tamil Words – Loan words – its written form – common words in Tamil and Regional language(viz. Malayalam)

Unit : 3 Formation of words and sentences and study of Basic grammer on the functional level **(15 hours)**

- Chol (word) – Peyar (Name), Vinai (Verb), Idai (clitics) etc.(Peyar (Name) – Gender, number & case; Vinai (Verb)- Kaalam (Tense) Orumai (Singular), Panmai (Plural)
- Thodar (syntax)/Vaakkiam (Sentence), Kaalam (Tense), Orumai (Singular), Panmai (Plural), Ezhuvaai (Subject), Payanilai (Predicate), Cheyappaduporul (Object). (It is to understand the language structure).
- Selected Tamil Proverbs (10)

Unit : 4 Study of selected prose and poetry in Tamil and Siddha literature

POETRY

(24 hours)

(Poems selected only for reading meaningfully and for memorising)

- Name of the book : Malarum maalaiyum
Author : Kavimani
Title : Pasuvum kantrum
Lines : Thottathil meythu
.....kantrukkuty. (2 stanzas)
- Pieces from Folk songs (Tamil)
1) Padaku 2) Elelankadi Elelo
- Name of the book : Bhaarathiyaar kavithaikal
Author : Subramaniya Bhaarathiyaar
Title : Paappaa paattu
Lines : Odi vilayadu pappa

-Vazhakkappaduthikkollu pappu (6 stanzas)
- d) Title : Kontrai venthan (15 Lines)
Author : Auvaiyaar
- e) Name of the book : Thirukkural
Author : Thiruvalluvar
Title : "Marunthu" Athikaram (10 verses)
- f) Name of the book : Maruthuva vatha yoga gnana saththiram
Lines : "Aathikaalathilae thillayilae
.....chernthaner emaiikkaakavae"
- g) Name of the book : Yugi chinthaamani
Lines : "
- Uruthiyam poothathi
-uraikkak kela"
- h) Name of the book : Chithar Padalkal
Author : Kovinthan
Lines : Thunaichiru..... (27)
"Ettumalai....." (28)
- i) Name of the book : Thirumanthiram
Author : Thirumoolar
Title : Marunthu
: "Maruppathu udal noi.....
.....marunthenalamae"
- j) Name of the book : Siddha Maruthuva Chirappu
Author : Dr. R. Thiagarajan
Title : Ashtanka yokam
Lines : "Eyama
.....maavathumaame"
- k) Name of the book : Siddha Maruthuvaanka Churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : Udal Aimpoothakoorupaattaiyum Udaiyathu Enal.
Lines : "Paarappa.....
.....Lapamatha Mohamacham"
- l) Name of the book : Siddha maruthuvanka churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : Iympootham – Arusuvai thodarpu
Lines : "Mannudane
.....uraittha maraiye"
- m) Name of the book : Siddha maruthuvanka churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : Pathinaanku Vekangal
Lines : "Pathinaanku.....
:swasamaame"

PROSE

(21 hours)

- a) Name of the book : Siddharkal charithram

- Author : Chollin selvan
Chapter : Brahmamuni, Korakkar
- b) Name of the book : “Lemuria allathu Kumari Kandam”
Chapter : Kumari nadu pattriya Tamil nool kurippukal
Author : Panmozhi pulavar K.Appathurai.
- c) Name of the book : Pattukkottai Kaliyana Sundaram Padalkal
Author : KunRakkudi Adikalaar
Chapter : Preface of Pattukkottai kaliyana Sundaram Padalkal
- d) Name of the book : Nalla Theerppu
(An eloquent speech of C.N. Anna Durai)

Unit : 5 Study of History of siddha medicine – Selected portion from the Siddha literature. **(20 hours)**

Siddharkal enpor yaar?- Pathinen Siddharkal – Navanaatha Siddharkal – Siddha Maruthuvathin Chirappukkal – Siddha Maruthuva Varalaru in brief – Iyankum Porudkalum Iyankaa Porudkalum.(who are Siddhars’; Eighteen Siddhars – Navanatha Siddhars – The importance of Siddha medical practices- Brief history of Siddha medical practices – movable and immovable things)

Unit : 6 Exercises in narration / description of a story or an event in a paragraph. **(3 hours)**

Unit : 7 Translation from Tamil to Regional language or English – and Vice versa. **(3 hours)**

References Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Thottakkirama aaraichiyum maruthuva varalaarum.	Dr. Uthamarayan
2.	Siddha maruthuvanga churukkam.	Dr. Uthamarayan
3.	Siddha vaidhya thirattu.	Dr. Uthamarayan
4.	Pathinen siddhargal varalarum Padaitha noolgalum.	Murugesan
5.	Siddhargal, Thamarai noolagam, Chennai – 26.	-

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)

4. UYIR VEDHIYAL (BIOCHEMISTRY)

Total Hours : 150

1. Chemistry of Carbohydrates: (9 hours)

Functions of Carbohydrates, Classification of Carbohydrates, Classification and biomedical importance of monosaccharides, Reactions of monosaccharides, Classification and biomedical importance of disaccharides, Polysaccharides- Classification, composition and function.

2. Chemistry of Lipids: (8 hours)

Functions of Lipids, Classification of Lipids, Classification of fatty acids, Essential fatty acids, Free radicals and antioxidants, Types and functions of phospholipids, Glycolipids and lipo proteins, Steroids, Micelles , Names and functions of eicosanoids.

3. Chemistry of Proteins : (11 hours)

Functions of proteins, Classification of proteins based on chemical nature and solubility, classification of amino acids based on structure, Structure of proteins primary, secondary , tertiary and quaternary. Biologically important peptides. Plasma proteins: Types and major functions, the complement system.

4. Nucleic acids and Biotechnology: (8 hours)

Watson and cricks structure of DNA, Types and functions of RNA, structure of transfer RNA, Replication of DNA, Definition of transcription, Polymerase chain reaction (PCR), - Principle, technique, applications. Human genome project, Bioinformatics.

5. Purine nucleotides: (4 hours)

Degradation of purine nucleotides, Gout.

6. Metabolism of carbohydrates: (10 hours)

Glycolysis, TCA cycle, HMP shunt pathway, Glycogenesis, glycogenolysis, and Gluconeogenesis. Glucose homeostasis, Diabetes mellitus.

7. Metabolism of proteins: (6 hours)

Transamination, deamination and urea cycle. Biosynthesis of proteins (Translation).

8. Metabolism of Lipids: (9 hours)

Fatty acid oxidation, Ketone bodies, Ketosis. Biosynthesis of fatty acids, Biosynthesis of cholesterol, Degradation of cholesterol, Hypercholesterolemia, Metabolism of HDL, Fatty liver, Obesity.

9. Biological oxidation (8 hours)

Classification of high energy compounds, ATP-ADP cycle, oxidative phosphorylation and electron transport chain, substrate level phosphorylation.

10. Enzymes: (9 hours)

Classification, Factors affecting enzyme activity, Active site, Mechanism of enzyme action, Coenzymes, Diagnostic importance of enzymes, Enzyme pattern in diseases.

11. Digestion and absorption of carbohydrates, proteins and lipids. (8 hours)

12. Haemoglobin:	(5 hours)
Structure of haemoglobin, Biosynthesis of heme, Degradation of heme. Clinical significance of Glycosylated Haemoglobin, Jaundice	
13. Vitamins:	(9 hours)
Fat soluble Vitamins and Water soluble vitamins –food source, RDA, biochemical functions and deficiency manifestations.	
14. Hormones: Biochemical functions and disorders.	(9 hours)
15. Minerals:	(9 hours)
Macro Elements and Micro Elements–food source, RDA, biochemical functions and deficiency manifestations.	
16. Metabolism of Xenobiotics (Detoxification).	(3 hours)
17. Water and electrolytes:	(5 hours)
Functions of water, water turn over and balance, Composition of electrolytes in the body fluids.	
18. Nutrition:	(7 hours)
Calorie value of food stuffs, Basal metabolic rate, Specific dynamic action, Fibre in nutrition, Balanced diet, protein – Energy malnutrition, Energy requirements.	
19. Cancer and AIDS:	(5 hours)
Cancer – Etiology and tumour markers. AIDS – Transmission of HIV and Lab Diagnosis.	
20. Organ function tests:	(8 hours)
Liver function tests, Renal function tests, Thyroid function tests.	

PRACTICAL

Total Hours : 100

PART A. Qualitative Analysis:-	(26 hours)
I. Reactions of carbohydrates -	
1. Reactions of Glucose.	
2. Reactions of Fructose.	
3. Reactions of Maltose.	
4. Reactions of Lactose.	
5. Reactions of Sucrose.	
6. Reactions of Starch.	
II. Reactions of Protein -	
1. Reactions of Albumin.	
2. Reactions of Peptone.	
3. Reactions of Gelatin.	
4. Reactions of Casein.	
III. Reactions of non protein nitrogenous substances – urea, uric acid, creatinine.	
IV. Reactions of Normal Urine.	

V. Analysis of abnormal urine.

PART B. QUANTITATIVE ANALYSIS

(48 hours)

1. Estimation of Blood Sugar.
2. Estimation of serum total proteins.
3. Estimation of serum cholesterol.
4. Estimation of serum triglycerides.
5. Estimation of serum urea.
6. Estimation of serum uric acid.
7. Estimation of serum creatinine.
8. Estimation of serum bilirubin.
9. Estimation of serum inorganic phosphate.
10. Estimation of serum amylase.
11. Estimation of SGOT.
12. Estimation of SGPT.

PART C: DEMONSTRATION

(6 hours)

1. Glucose Tolerance Test with graph (Normal and Abnormal).
2. Paper electrophoresis.
3. Paper chromatography.

PART D: SPOTTERS

(10 hours)

1. Calorimeter
2. PH meter
3. Haemoglobinometer
4. Rhyles tube.
5. Spectroscope
6. Centrifuge
7. Electrophoresis
8. Chromatography
9. Osazones
10. Semi auto analyzer

PART E: CASE REPORTS

(10 hours)

1. GTT Graph
2. Renal Glycosuria
3. Acute myocardial infraction
4. Jaundice
5. Gout
6. Hyperthyroidism
7. Vitamin D deficiency
8. Renal failure
9. Kwashiorkor
10. Hypercholesterolemia.

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Biochemistry	U.Satyanarayana, U.Chakrapani
2.	Text book of biochemistry	D.M. Vasudevan, Sreekumari. S
3.	Biochemistry	Pankaja Naik
4.	Harper's Illustrated Bio - Chemistry	
5.	Manual of practical medical biochemistry	Evangeline Jones. M.D.
6.	Practical text book of biochemistry	D.M. Vasudevan, Subir Kumar das

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)
5. MARUTHUVA THAVARAIYAL (MEDICINAL BOTANY AND PHARMACOGNOSY)

THEORY:

Total Hours : 200

MEDICINAL BOTANY

Unit - I:

(25 hours)

Definition - History and importance of Medicinal plants in Siddha science.

Plant biology and Medicinal uses of the following groups: Thallophytes, Bryophytes, Pteridophytes and Gymnosperms.

Study of Life-cycle of the following: Gracilaria, Penicillium, Parmelia and Dryopteris.

Unit -II:

(35 hours)

Taxonomy of Angiosperms- Natural system of classification (Bentham and Hooker)

Herbarium Techniques

Diagnostic vegetative and Reproductive characters, Active principles and Pharmacological constituents of most used plants of the following families:

1. Ranunculaceae
2. Annonaceae
3. Menispermaceae
4. Capparaceae
5. Malvaceae
6. Zygophyllaceae
7. Rutaceae
8. Meliaceae
9. Fabaceae
10. Caesalpiniaceae
11. Mimosaceae
12. Combretaceae
13. Myrtaceae
14. Cucurbitaceae
15. Apiaceae
16. Rubiaceae
17. Asteraceae
18. Apocynaceae
19. Asclepiadaceae
20. Convolvulaceae
21. Solanaceae
22. Acanthaceae
23. Lamiaceae
24. Nyctaginaceae
25. Amaranthaceae
26. Aristolochiaceae
27. Euphorbiaceae
28. Zingiberaceae
29. Liliaceae
30. Poaceae

Unit – III:

(30 hours)

Plant Anatomy: Idealised plant cell structure, cell organelles and cell inclusion.

Study of following anatomical structures Dicot leaf, stem and root, Monocot leaf, stem and root.

Unit – IV: (25 hours)
 Plant Ecology - Plants in relation to environment - Hydrophytes, Mesophytes, Xerophytes and Halophytes.
 Conservation of extant and endangered medicinal plants.
 Plant tissue culture - culture methods - callus initiation - laboratory organization.
 Detailed study on phytochemical production in tissue culture methods.
 Maintenance of herbal gardens.

PHARMACOGNOSY

Unit-I: (30 hours)
 Study of organized raw drugs based on their morphology:
 Roots and Rhizomes
 Woods
 Barks and Galls
 Leaves
 Flowers
 Fruits
 Seeds
 Whole plant

Unit -II: (15 hours)
 Study of unorganized raw drugs:
 Gums
 Resins and types
 Fixed oils

Unit –III: (20 hours)
 Phytochemistry (pharmacological actions of the following)
 Glycosides-Anthroquinone, Cardiac and Saponins
 Alkaloids-Tropane, Quinoline and Indole
 Tannins-Hydrolysable and Condensed
 Volatile oils-Obtained from the various plant parts
 Pigmentation studies-Chlorophyll, Xanthophyll, A.nthocyanin

Unit-IV: (20 hours)
 Adulteration of rawdrugs & detection. Poisonous plants. Basics of Herbal drug standardization.

PRACTICALS: Total Hours : 100

1. Microscopic slides observation of the non-flowering plant genera mentioned in Unit-I. (10 hours)
2. Identification of Angiosperm families given in Unit II. (20 hours)
3. Field study of various medicinal plants in their original habitat and pigment studies. (15 hours)
4. Submission of Herbarium (20 sheets) & Raw drugs (30). (14 hours)
5. Pigment studies - By paper chromatography method. (3 hours)
6. Anatomical study of plant parts — by section method mentioned in Unit III. (12 hours)
7. Plant Ecology - adaptation - Macroscopic & Microscopic mentioned in Unit IV. (10 hours)
8. Raw Drugs - Identification. (16 hours)

References Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	College botany vol. I, II, III, Ed. 2000, New Central Book Agency Pvt Ltd.	Gangulee et al.
2.	Outlines of Botany,. Ed. 2003, S. Viswanathan Publishers.	V. Narayanaswamy et. al.
3.	Plant Ecology, S. Chand & Co.	Sharma
4.	A Text Book of Botany - Angiosperms, Rastogi Publishers, Meerut.	V. Singh, Pande & Jain
5.	Medicinal Botany Vol-I&II (Tamil) - Elangovan Publishers.	Somasundaram
6.	Medical Taxonomy of Angiosperms. Recent trends in Medical used and Chemical constituents. Harishi Publication, Chennai.	S. Shankaranarayanan
7.	Taxonomy of Angiosperms (Tamil) V.K. Publishing House, Chennai	S. Pazhaniyappan
8.	Elements of Biotechnology, Rastogi & Company.	P.K. Gupta
9.	Text Book of Pharmacognosy, Nirali Prakashan, Pune.	Gokhale et. al.
10.	Practical Pharmacognosy, Vallabh Prakasham, Delhi – 34.	Dr. C.K. Koate.

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. (2013 SCHEME)

6. NUNNUYIRIYAL (MICROBIOLOGY)

Total Hours : 100
(15 hours)

General Bacteriology

1. Introduction and History
2. Morphology of Bacteria
3. Growth and Nutrition of Bacteria
4. Classification and Identification of Bacteria
5. Culture media and cultivation methods
6. Sterilization and disinfection
7. Antimicrobial sensitivity

Systemic Bacteriology

(30 hours)

1. Gram Positive Cocci - Staphylococcus, Streptococcus, Pneumococcus & Enterococcus
2. Gram Negative Cocci - Meningococci and Gonococci
3. Enterobacteriaceae - Escherichia, Klebsiella, Proteus, Salmonella and Shigella
4. Vibrio cholerae, Pseudomonas, Haemophilus
5. Clostridium tetani, C.perfringens, C.botulinum
6. Bacillus anthracis
7. Corenebacterium diphtheriae
8. Mycobacterium - Tuberculosis and Leprosy
9. Spirochaetes - Treponema & Leptospira
10. Mycoplasma, Chlamydiae & Rickettsiae

Immunology

(20 hours)

1. Infection
2. Structure and function of immune system
3. Immunity
4. Antigens
5. Antibodies
6. Antigen - antibody reaction - Agglutination, Precipitation, Immunofluorescence, Coomb's Test, ELISA, Western blot
7. Complement system
8. Hypersensitivity
9. Auto-immunity

Mycology

(5 hours)

1. Opportunistic Mycosis
2. Dermatophytes
3. Cryptococcus, Rhinosporidium and Histoplasma
4. Mycotoxicosis and Mycetism

Virology

(20 hours)

1. General properties and cultivation of Virus
2. Bacteriophage
3. Pox virus
4. Herpes virus - HSV-I &II
5. Myxovirus - H1N1, Avian flu, Mumps and Measles
6. Corona virus — SARS

7. Polio virus
8. Rabies virus
9. Hepatitis virus (A, B & C)
10. Arbo virus - Chikungunya, Dengue & Rubella
11. Retro virus - HIV

Clinical Microbiology

(10 hours)

1. Nosocomial infection
2. UTI
3. Meningitis
4. Bacterial food poisoning
5. PUO
6. Biomedical waste management
7. Vaccines (Bacterial & Viral)

Practical

Total Hours : 100

1. Microscopy - Light, Dark Ground, Fluorescent, Electron **(6 hours)**
2. Staining - Gram's and AFB staining. **(15 hours)**
3. Culture methods - Streak plate, Anaerobic, RCM. **(11 hours)**
4. Bacterial identification - Esch.coli, Klebsiella, Pseudomonas, Vibrio cholerae, Corynebacterium, diphtheriae, Staphylococcus aureus. **(45 hours)**
5. Serology - WIDAL & VDRL with clinical significance. **(4 hours)**
6. Immunology — ELISA, Latex agglutination. **(6 hours)**
7. Mycology - LPCB mounting. **(6 hours)**
8. Viral model - Rabies, HIV, Orthomyxo & Adeno virus. **(7 hours)**

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Text Book of Microbiology	Ananthanarayan and C.K. Jayaram Paniker
2.	Text Book of Microbiology	D.R. Arora and B Arora
3.	Medical Microbiology	Robert Cruik Shank