

# KERALA UNIVERSITY OF HEALTH SCIENCES THRISSUR

## REGULATIONS, CURRICULUM, AND SYLLABUS OF B.S.M.S COURSE

(With effect from 2013 admission)

### **1. AIMS AND OBJECTS OF SIDDHA EDUCATION**

The Siddha education should aim at producing graduates of profound scholarship having deep basis of Siddha with scientific knowledge in accordance with fundamentals with extensive practical training who would be able and efficient teachers, research scholars, physicians and surgeons of Siddha system, fully competent to serve in the medical and health services of the country.

### **2. ADMISSION QUALIFICATION**

- (a) 12th standard with science or any other equivalent examination recognised by University or Boards with fifty per cent aggregate marks in the subjects of Physics, Chemistry and Biology.
- (b) Provided that for foreign students any other equivalent qualification to be approved by the concerned authorities will be allowed.
- (c) Candidates should have passed Tamil as one of the subjects in the 10th Standard or in Higher Secondary course.
- (d) Candidates who are not covered under clause (c) above, have to study Tamil as a subject during the First Professional session.

### **3. SELECTION OF STUDENTS**

The selection of students for the BSMS course shall be made strictly on merit as decided by the Govt of Kerala/Kerala University of Health Sciences and as per guidelines of the respective council.

#### **3.1 REGISTRATION**

A candidate on admission to the BSMS course shall apply to the University for Registration

- i. By making a formal application in the prescribed format.
- ii. Original mark lists of the qualifying examination.
- iii. Transfer certificate from the previous institution.
- iv. Allotment letter from the competent authority who conducted the admission process
- v. Equivalency and migration certificate where ever needed.
- vi. Original SSLC/Equivalent Certificate.
- vii. The fees prescribed for the registration.

### **4. DURATION OF COURSE**

The duration of the course shall be five years and six months comprising:—

- a. First Professional - Twelve months
- b. Second Professional - Twelve months
- c. Third Professional - Twelve months
- d. Final Professional - Eighteen months
- e. Compulsory Rotatory Internship - Twelve months.

## **5. ATTENDANCE**

Minimum of 80% attendance separately in clinics/practicals and theory is the criteria for appearing the university examination. Condonation of 10% of attendance once in the entire course period can be granted by the Head of the institution.

## **6. DEGREE TO BE AWARDED**

The candidate shall be awarded Bachelor of Siddha Medicine and Surgery-B.S.M.S (Siddha MaruthuvaArignar) degree after passing all the examinations and completion of the prescribed course of study extending over the prescribed period, and thereafter satisfactorily completing the compulsory rotatory internship extending over twelve months.

## **7. MEDIUM OF INSTRUCTION**

The medium of instruction for the course shall be Tamil or Hindi or any recognised regional language or English.

## **8. SCHEME OF EXAMINATION**

(1) (a) The first professional session will ordinarily start in July and the first professional examination shall be at the end of one academic year of first professional session.;

(b) The first professional examination shall be held in the following subjects:-

(i) Siddha Maruthuva Adippadai Thathuvangalum Varalarum [History and Fundamental Principles of Siddha Medicine];

(ii) Tamil Language or Communicative English (wherever applicable);

(iii) Uyir Vedhiyal (Bio-Chemistry);

(iv) Maruthuva Thavaralyal (Medicinal Botany and Pharmacognosy); and

(v) Nunnuyiriyal (Microbiology);

(c) A student failed in not more than two subjects shall be held eligible to keep the terms for the second professional session, however the student shall not be allowed to appear for second professional examination unless the student passes in all the subjects of the first professional examination.

(2) (a) The second professional session shall start every year following completion of first professional examination and the second professional examination shall be ordinarily held and completed by the end of one academic year every year after completion of one year of second professional session;

(b)The second professional examination shall be held in the following subjects:-

(i) Udal Koorugal (Anatomy) Paper I;

(ii) Udal Koorugal (Anatomy) Paper II;

(iii) Udal Thathuvam (Physiology) Paper I;

(iv) UdalThathuvam (Physiology) Paper II;

(v) Gunapaadam-Paper I (Mooligai) (Materia Medica - Plant kingdom); and

(vi) Gunapaadam -Paper II (Materia Medica –Thathu and Vilanginam) (Metals,Minerals and Animal kingdom);

(c) A student failed in not more than two subjects shall be held eligible to keep the terms for the third professional session, however the student shall not be allowed to appear for third professional examination unless the student passes in all the subjects of second professional examination.

(3) (a)The third professional session shall start every year following completion of second professional examination and the third professional examination shall be ordinarily held and completed by the end of one academic year every year after completion of one year of third professional session;

(b) The third professional examination shall be held in the following subjects: —

(i) Noi Naadal -Paper I (Siddha Pathology);

(ii) Noi Naadal -Paper II (Principles of Modern Pathology);

- (iii) Noi Anugavidhi Ozhukkam (Hygiene and Community Medicine including National Health Policies and Statistics);
  - (iv) SattamSaarntha Maruthuvamum Nanju Maruthuvamum (Forensic Medicine and Toxicology); and
  - (v) Research Methodology and Medical-statistics;
- (c) A Student failed in not more than two subjects shall be held eligible to keep the terms for the final professional examination, however the student shall not be allowed to appear for final professional examination unless the student passes in all the subjects of third professional examination.
- (4) (a) The final professional session shall be of one year and six months duration and shall start every year following completion of third professional examination and the final professional examination shall be ordinarily held by the end of after completion of one year and six months of final professional session;
- (b) The final professional examination shall comprise of the following subjects: —
- (i) Maruthuvam (Medicine);
  - (ii) Varmam, Puramaruthuvam and Sirappumaruthuvam (Varmam Therapy, External Therapy and Special medicine);
  - (iii) Aruvai, Thol Maruthuvam (Surgery including dentistry and Dermatology);
  - (iv) Sool, Magalir Maruthuvam (Obstetrics & Gynaecology); and
  - (v) Kuzhanthai Maruthuvam (Paediatrics).

#### **9. CRITERIA FOR PASS**

A candidate shall be declared as pass if the student secures 50% of marks in each subject in theory and practical examinations separately. In the practical section (Including viva voce) a candidate shall secure 50% marks.

#### **10. COMPULSORY ROTATORY INTERNSHIP**

- (1) Duration of Compulsory Rotatory Internship shall be one year and the student shall be eligible to join the compulsory internship programme after passing all the subjects from first to the final professional examinations.
- (2) Internship Programme and time distribution shall be as follows:-
- (a) The interns will receive an orientation regarding programme details of internship programme along with the rules and regulations, in an orientation workshop, which will be organised during the first three days of the beginning of internship programme and a workbook will be given to each intern, in which the intern will enter date wise details of activities undertaken during training;
  - (b) Every intern will provisionally register with the concerned State Board or Council and obtain a certificate to this effect before joining the internship program;
  - (c) Daily working hours of intern will be not less than eight hours;
  - (d) Normally one year internship programme will be divided into clinical training of six months in the Siddha hospital attached to the college and six months in Primary Health Centre or Community Health Centre or Rural Hospital or District Hospital or Civil Hospital or any Government Hospital of modern medicine. Where there is no provision or permission of the State Government for allowing the graduate of Siddha in the hospital or dispensary of modern medicine, the one year internship will be completed in the hospital of Siddha college.

(3) Clinical Training of six or twelve months, as case may be, in the Siddha hospital attached to the college will be conducted as follows: —

Sl.No.	Departments	Distribution of six months	Distribution of twelve months
(i)	Maruthuvam	45 days	3 Months
(ii)	Varmam, Puramaruthuvam and Sirappumaruthuvam	45 days	3 Months
(iii)	Aruvai,Thol Maruthuvam	1 Month	2 Months
(iv)	Sool, MagalirMaruthuvam	1 Months	2 Month
(v)	KuzhanthaiMaruthuvam	15 days	1 Month
(vi)	AvasaraMaruthuvam	15 days	1 Month

(4) Six months training of interns shall be carried out with an object to orient and acquaint the intern with the National Health Programme and the intern shall undertake such training in one of the following institutes, namely: —

- (a) Primary Health Centre;
- (b) Community Health Centre or District Hospital;
- (c) Any recognized or approved hospital of modern medicine;
- (d) Any recognized or approved Siddha hospital or dispensary:

Provided that all the above institutes mentioned in clauses (a) to (d) will have to be recognised by the concerned Government for taking such training.

(5) Detailed Guidelines for internship programme: The intern shall undertake the following activities in the respective department as shown below:-

(a) Maruthuvam- Duration of internship in this department shall be one and half month or three months with following activities: —

- (i) all routine works such as case taking, investigations, diagnosis and management of common diseases;
- (ii) routine clinical pathology work such as haemoglobin estimation, complete haemogram, urine analysis, microscopic examination of blood parasites, sputum examination, stool examination, neerkuri, neikuri malaparisdhanai, interpretation of laboratory data and clinical findings, and arriving at a diagnosis;
- (iii) training in routine ward procedures and supervision of patients in respect of their diet, habits and verification of medicine regime;

(b) Varmam, Puramaruthuvam and Sirappumaruthuvam- Duration of internship in this department shall be one and half month or three months and intern should be practically trained to acquaint with the following activities:-

- (i) location of types of Varmam points;
- (ii) diagnosis of various pathological conditions due to application of Varmam procedures and techniques;

- (iii) procedures of Ilakkumuraigal with internal or external medication;
- (iv) various Puramaruthuvam procedures and techniques with special emphasize on Thokkanam;
- (v) fractures and dislocations and their management;
- (vi) geriatric care (Moopiyal);
- (vii) management of psychiatric cases (Ula Pirazhvu Noi);
- (viii) kayakarpam (Rejuvenation therapy and yogam);
- (c) Aruvai and Thol Maruthuvam- Duration of internship in this department shall be one month or two months and intern should be practically trained to acquaint with the following activities: —
  - (i) diagnosis and management of common surgical disorders according to Siddha principles;
  - (ii) management of certain ailments such as fractures and dislocations;
  - (iii) practical training of aseptic, antiseptics techniques and sterilization;
  - (iv) intern should be involved in pre-operative and post-operative managements;
  - (v) practical use of anesthetic techniques and use of anesthetic drugs;
  - (vi) Radiological procedures, clinical interpretation of X-ray, Intra Venous Pyelogram, Barium meal, Sonography and Electro Cardio Gram;
  - (vii) examinations of eye, ear, nose, throat and other parts of the body with the supportive instruments;
  - (viii) surgical procedures and routine ward techniques such as:-
    - (a) suturing of fresh injuries;
    - (b) dressing of wounds, burns, ulcers and similar ailments;
    - (c) incision of abscesses;
    - (d) excision of cysts;
    - (e) venesection; and
    - (f) application of Kaaranool in ano-rectal diseases;
  - (ix) procedures like Anjanam, Nasiyam, Attaival at Out-Patient Department level;
  - (x) diagnosis and management of common dental disorders; and
  - (xi) training in Blood Bank and transfusion procedures;
- (d) Sool, Magalir Maruthuvam- Duration of internship in this department shall be one month or two months and intern should be practically trained to acquaint with the following activities: —
  - (i) antenatal and post-natal problems and their remedies; antenatal and postnatal care;
  - (ii) management of normal and abnormal labours; and
  - (iii) minor and major obstetric surgical procedures;
- (e) Kuzhanthaimaruthuvam- Duration of internship in this department shall be fifteen days or one month and intern should be practically trained to acquaint with following activities:-
  - (i) care for new born child along with immunization programme; and
  - (ii) important pediatric problems and their management;
- (f) Avasamaruthuvam (Casualty) - Duration of internship in this department shall be fifteen days or one month and intern should be practically trained to acquaint with the following activities:-
  - (i) identification of casualty and trauma cases and their first line management; and
  - (ii) procedure for referring such cases to the identified hospitals;
- (6) Internship training in Primary Health Centre or Rural Hospital or District Hospital or Civil Hospital or any Government Hospital of modern medicine: During the six months internship training in Primary Health Centre, Community Health Centre or District Hospital or any recognized or approved hospital of Modern Medicine or Siddha Hospital or Dispensary, the interns shall-

- (i) get acquainted with the routine of the Primary Health Centre and maintenance of their records;
- (ii) get acquainted with the routine working of the medical or non-medical staff of Primary Health Centre and be always in contact with the staff in this period;
- (iii) get familiarized with the work of maintaining the relevant register like daily patient register, family planning register, surgical register and take active participation in different Government Health Schemes or Programmes; and
- (iv) participate actively in different National Health Programmes implemented by the State Government.

#### **11. INTERNSHIP TRAINING IN RURAL SIDDHA DISPENSARY OR HOSPITAL**

During the six months internship training in Rural Siddha dispensary or Hospital, interns shall-

- (i) get acquainted with the diseases more prevalent in rural and remote areas and their management; and
- (ii) involve in teaching of health care methods to rural population and also various immunization programmes.

#### **12. ASSESSMENT**

After completing the assignment in various Sections, the interns have to obtain a completion certificate from the head of the Section in respect of their devoted work in the Section concerned and finally submit to the Principal or Head of the institute so that completion of successful internship can be granted.

#### **13. MIGRATION OF INTERNSHIP**

- (1) Migration of internship will be only with the consent of the both college and University, in case the migration is between the colleges of two different Universities.
- (2) In case migration is only between colleges of the same University, only the consent of both the colleges will be required.
- (3) The migration will be accepted by the University on the production of the character certificate issued by institute or college and application forwarded by the college and University with a No Objection Certificate, as case may be.

#### **14. EXAMINATION**

- (a) A candidate obtaining seventy-five per cent. marks in the subject shall be awarded distinction in the subject;
- (b) The minimum marks required for passing the examination shall be fifty per cent in theory and fifty per cent in practical or clinical, wherever applicable in each subject;
- (c) The supplementary examination shall be held within six months of regular examination and failed students shall be eligible to appear in its supplementary examination, as the case may be;
- (d) Minimum of seventy-five per cent attendance in each subject separately in theory and practical shall be essential for a student appearing in the examination;
- (e) In case a student fails to appear in regular examination for cognitive reason, he shall appear in supplementary examination as a regular student, whose non-appearance in regular examination shall not be treated as an attempt and such students after passing examination shall join the studies with regular students and appear for next professional examination after completion of the required period of study;
- (f) The following facts may be taken into consideration in determining class work in the subject:-
  - (i) Regularity in attendance;
  - (ii) Periodical tests; and
  - (iii) Practical work.

**15. MIGRATION:**

(1) The students may be allowed to take the migration to continue their study in another college after passing the first professional examination, but failed students transfer and mid-term migration shall not be allowed.

(2) For migration, the students shall have to obtain the mutual consent of both colleges and Universities and it will be against the vacant seat after obtaining No Objection Certificate from the Central Council.

**16. NUMBER OF PAPERS AND MARKS FOR THEORY AND PRACTICAL**

Name of the Subject	Number of hours of teaching			Details of maximum marks			
	Theory	Practical/ Clinical	Total	No of Papers	Theory	Practical /Clinical (Including Viva Voce)	Total
<b>First Professional</b>							
1. Siddha Maruthuva Adippadai Thathuvangalum Varalarum [History and Fundamental Principles of Siddha Medicine]	150	---	150	One	100	---	100
2. Tamil Language	100	---	100	One	100	---	100
3. Communicative English	100	---	100	One	100	---	100
4. UyirVedhiyal (Bio-Chemistry)	150	100	250	One	100	100	200
5. MaruthuvaThavaralyal (Medicinal Botany and Pharmacognosy)	200	100	300	One	100	100	200
6. Nunnuyiriyal (Micro Biology)	100	100	200	One	100	100	200
<b>Second Professional</b>							
1. UdalKoorugal (Anatomy)	200	150	350	Two	200	200	400
2. UdalThathuvam (Physiology)	150	100	250	Two	200	200	400
3. Gunapadam-Paper I (Mooligai) (MateriaMedicaPlant kingdom)	200	100	300	One	100	100	200
4. Gunapaadam - Paper II (Thathu and Vilanginam) (MateriaMedica-Metals, Minerals and Animal kingdom).	200	100	300	One	100	100	200
<b>Third Professional</b>							
1. NoiNaadal - Paper I (Siddha Pathology)	200	100	300	One	100	100	200
2. NoiNaadal - Paper II (Principles of Modern Pathology)	150	100	250	One	100	100	200

3. NoiAnugavidhiOzhukkam (Hygiene and Community Medicine including National Health Policies and Statistics).	100	--	100	One	100	--	100
4. Sattam Saarntha Maruthuvamum Nanju Maruthuvamum (Forensic Medicine and Toxicology)	150	100	250	One	100	100	200
5. Research Methodology and Medical-statistics	100	---	100	One	100	---	100
<b>Final Professional</b>							
1. Maruthuvam (Medicine)	150	200	350	One	100	100	200
2. Varmam, Puramaruthuvam and Sirappumaruthuvam (Varmam Therapy External Therapy and Special Medicine)	150	200	350	One	100	100	200
3. Aruvai, TholMaruthuvam (Surgery including dentistry and Dermatology)	150	200	350	One	100	100	200
4. Sool, MagalirMaruthuvam (Obstetrics and Gynaecology)	100	175	275	One	100	100	200
5. Kuzhanthai Maruthuvam (Paediatrics)	100	175	275	One	100	100	200

Note 1:- Clinical training to the students shall start from the commencement of third professional session onward.

Note 2:- The clinical training to the students in the hospital attached with college shall be rotational within all departments of third and final professional session.

#### **17. QUALIFICATIONS AND EXPERIENCE FOR TEACHING STAFF FOR UNDER-GRADUATE COURSE**

(I) Essential- (a) A degree in Siddha as recognised under the Indian Medicine Central Council Act, 1970;

(b) A Post-graduate qualification in Siddha recognised under the Indian Medicine Central Council Act, 1970. Provided that teachers who are appointed before the date of this notification with the qualification of Under-Graduate degree in Siddha with a higher qualification in the subject concerned not recognised under the Indian Medicine Central Council Act, 1970 shall also be considered eligible in their current designation as per their teaching experience, but they shall be promoted to the next or any other grade only after obtaining Post-Graduate degree in Siddha recognized under the Indian Medicine Central Council Act, 1970; and (c) For the subjects of Tamil or Communicative English, Medicinal Botany and Pharmacognosy, Biochemistry, Anatomy, Physiology, Micro-Biology teachers with Post Graduate degree from a recognized University in the subject concerned can also be appointed.



- (II) Experience: (a) Qualification for the Post of Head of the Institution (Principal or Dean or Director): The qualification and experience prescribed for the Post of Professor shall be essential for these posts of Principal or Dean or Director also;
- (b) For the post of Professor: Total teaching experience of ten years is necessary out of which there should be five years teaching experience as Reader or Associate Professor;
- (c) For the post of Associate Professor (Reader): Teaching experience of five years (Reader will be treated as Associate Professor);
- (d) For the post of Assistant Professor (Lecturer) with age not exceeding forty-five years, no teaching experience is required and Lecturer will be treated as Assistant Professor.

Note 1: The teacher(s) who had been considered eligible on the basis of Schedule II to the Indian Medicine Central Council (Minimum Standards of Education in Indian Medicine) Regulation, 1986 shall not be considered ineligible after publication of the Indian Medicine Central Council (Minimum Standards of Education in Indian Medicine) Amendment Regulation, 2013; and Note 2: The research experience of regular Doctor of Philosophy (Ph.D.) holder will be considered equivalent to one year teaching experience.

#### **18. AWARD OF RANK**

Ranks and medals shall be awarded on the basis of aggregate of the all university examinations of the particular course however a candidate who fails in one or more subject during the course shall be not eligible for the award of ranks and medals.

#### **19. AWARD OF DEGREE**

A candidate who passes entire subjects of the course and undergone internship satisfactorily for the specific period will be eligible for the award of degree during the ensuing convocation.

#### **20. APPOINTMENT OF EXAMINER IN SIDDHA**

The appointment of Examiners shall be decided as per the norms existing in the University concerned.

#### **21. INTERNAL ASSESSMENT**

Average of the better of two performances shall be calculated for internal assessment of theory, practical and viva voce in which final assessment examination is compulsory. Minimum marks required for internal assessment is 35%. Internal Assessment mark of a subject shall not exceed the class average of 75%. The candidates securing minimum 35% of internal assessment marks are mandatory for gaining eligibility for appearing examinations only. This shall not be considered for awarding pass to the subject concerned.

# **CENTRAL COUNCIL OF INDIAN MEDICINE**

## **SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. COURSE**

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

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

##### **(1) Pathi**

(Almighty):

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) GnaanaSakthi 4) ItchaaSakthi 5) Kriyaasakthi.

d) Study of cosmicplay (Thirukoothu).

##### **(2) Pasu**

(Soul):

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):

Definition, description and classification

i.e., Aanavam, Kanmam, Maayai and Thriodaanam

Classification of Maayai:-

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

Sivam – Sakthi – Sadaasivam – Easwara - Sudhavidhai.

2) Asutha Maayai: (Vidyaathathuvam) – 7 –

3) Impure evolutes of Maayai: Kaalam – Niyathi – Kalai – Araagam – Vidhai – Puruden - Maayai.

4) Prakruthi Maayai: (AanmaThathuvam) – 24,

5) peculiar properties of soul: Thanmathirais -5, Bootham - 5, Gnanaindriyam -5, Kanmendriyam – 5, Anthakaranam - 4.

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

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

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

#### **Examples.**

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 -**

Relation between macrocosm and microcosm (Andathil Ullathe Pindam).

### **V. Five element theory (Iymbootha Kolgai).**

Creation of five elements – Properties of five elements - five fold combination and its description (Panchabootha Panchikaranam) - application of five element theory in Siddha treatment aspect.

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

#### **i.e.,**

Sivaprakaasa Kattalai – Thiruvaalavai 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) - GnanaIndriyam - 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 (Threeregions) - 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 (Eightpassions) - Avasthai -5 (Five states of consciousness).

### **VII. Three humoural theory ( UyirThaathukkal):**

Vali, Azhal and Iyam.

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

### **VIII. Seven Physical constituents ( Udalkattukal ) :**

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:**

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

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

**X. Definition and description of the following:**

1. AttamaaSithigal
2. Thirukkural (MarunthuAthikaram)
3. Rasavaatham (Alchemy).
4. Muppu.
5. Kaayakalpam (Elixir Science).

**XI. History of Tamil Nadu including three Tamil Academies & Ancient Religious Traditions of Tamils(Arusamaiyakolgai)****XII. Chuvadilyal.****A. MANUSCRIPTOLOGY**

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**

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:**

Agasthiyar- Thirumoolar - Therayar - Yugimuni - Bohar - Sattamuni - NandhidevarRaamadevar- Dhanvanthri - Konganavar - Karuvoorar - Kaalanganadhar- PulippaaniPaampaattiSiddhar - Macchamuni- Romarishi - Koorakkar - Idaikaadar - SundaraanandharThiruvalluvar- AgappeiSiddhar - KuthambaiSiddhar - Sivavaakkir - AzhuganniSiddharPulathiar.

**XIV. AttaangaYogam:**

Iyamam- Niyamam - Aasanam - Pranaayaamam - Prathiyaakaram - Dhaaranai - DhiyaanamSamaadhi.

**XV. Encyclopaedia of Siddha MedicineReference Books:**

S.No. Name of book, Language, publishers & year of publicationAuthor

1. ThotrakiramaAraichiyum Siddha MaruthuvaVaralarum,(Tamil),The Directorate of Indian Medicine andHomoeopathy, Govt. of Tamilnadu,Chennai. (2005)Dr.K.S.Uttamarayan,H.P.I.M,
2. Siddha MaruthuvangaChurukkam (Tamil),TheDirectorate of Indian Medicine and Homoeopathy,Chennai (2005)Dr.K.S.Uttamarayan,H.P.I.M,
3. Siddha MaruthuvaVaralaru, (Tamil),InternationalInstitute of Tamil Studies, Chennai (2008) AnaivariAanathan

4. ThenindhiyaMaruthuvaVaralaru, (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), SharadaPublishing House, Delhi 1996.RS ShivaGaneshamurthy
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. AasivagamEnnumTamizharAnuviyam (Tamil) ManitamPathipagam, Trichy-21 (2013) Neduncheliyan K
12. ThamilarVaralaaru,(Tamil) ThamilmamPathippagam,Chennai(2000)ThevaneyaPaavaanar
13. Siddha MaruthuvaMoolaThathuvam (Tamil) SidhaMaruthuvamValarchiKazhagam, Jaffna, Srilanka (2002)S. Sivashanmuga raja
14. Siddha Dossier, CCRS, Dept. of AYUSH, New Delhi (2013) –

#### Online Material

1. தமிழ் மருத்துவ வரலாற்றுத் தொன்மைகள், முனைவர் இரா வாசுதேவன்  
<http://ta.wikisource.org/s/bn>
2. சுவடியியல் அறிமுகம்  
[http://kovaimani-tamilmanuscriptology.blogspot.in/2012\\_04\\_01\\_archive.html](http://kovaimani-tamilmanuscriptology.blogspot.in/2012_04_01_archive.html)
3. பேராசிரியர் முனைவர் இரா மாதவன்- ஓலைச்சுவடி ஆய்வுகள்  
<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, ThanjavurReference URL: <http://www.ifpindia.org/>

CENTRAL COUNCIL OF INDIAN MEDICINE  
SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. COURSE

**2. TAMIL LANGUAGE**

**Objective:**To acquire knowledge to understand the contents that are available in classical Tamil Siddha literature.

**COURSE CONTENT AND SYLLABUS**

Unit : 1 Exercises and drills in the spoken and written variety

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

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

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)/Vaakkiyam (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**

(Poems selected only for reading meaningfully and for memorising)

a) Name of the book :Malarummaalaiyum

Author :Kavimani

Title :Pasuvumkantrum

Lines :Thottathilmeythu .....

.....kantrukkuty. (2 stanzas)

b) Pieces from Folk songs (Tamil)

1) Padaku 2) ElelankadiElelo

c) Name of the book :Bhaarathiyaarkavithaikal

Author :SubramaniyaBhaarathiyaar

Title :Paappaapaattu

Lines :Odivilayadupappa .....

...Vazhakkappaduthikkollupappa (6

stanzas)

d) Title :Kontraiventhan (15 Lines)

Author :Auvaiyaar

e) Name of the book :Thirukkural

Author :Thiruvalluvar

Title : “Marunthu” Athikaram (10 verses)

f) Name of the book :Maruthuvavatha yoga gnanasatthiram

Lines : “ Aathikaalathilaethillayilae .....

.....chernthaneremaikkaakavae”

g) Name of the book :Yugichinthaamani

Lines :“

Uruthiyampoothathi .....

.....uraikkakkelaie”

h) Name of the book :ChitharPadalkal

Author :Kovinthan

Lines :Thunaichiru..... (27)

“Ettumalai.....” (28)

j) Name of the book :Thirumanthiram

Author :Thirumoolar

Title :Marunthu

Lines : “ Maruppathuudalnoi.....

.....marunthenalamae”

k) Name of the book : Siddha MaruthuvaChirappu

Author : Dr. R. Thiagarajan

Title :Ashtankayokam

Lines : “Eyama .....

.....maavathumaame”

l) Name of the book : Siddha MaruthuvaankaChurukkam

Author : Dr. C.S. Uthamarayan – H.P.I.M.

Title :UdalAimpoothakkoorupaattaiyumUdaiyathu

Enal.

Lines : “Paarappa.....

.....LapamathaMohamacham”

m) Name of the book : Siddha maruthuvankachurukkam

Author : Dr. C.S. Uthamarayan – H.P.I.M.

Title :lympootham –Arusuvaitthodarpu

Lines : “Mannudane .....

.....uraitthamaraiye”

n) Name of the book : Siddha maruthuvankachurukkam

Author : Dr. C.S. Uthamarayan – H.P.I.M.

Title :PathinaankuVethankal

Lines : “Pathinaanku.....

.....swasamaame”

#### **PROSE**

a) Name of the book :Siddharkalcharithram

Author :Chollinselan

Chapter :Brahmamuni, Korakkar

b) Name of the book : “LemuriaallathuKumariKandam”

Chapter :Kumarinadupattriya Tamil noolkurippukal

Author :PanmozhipulavarK.Appathurai.

c) Name of the book :PattukkottaiKaliyanaSundaramPadalkal

Author :KunRakkudiAdikalaar

Chapter : Preface of PattukkottaikaliyanaSundaram

Padalkal

d) Name of the book : NallaTheerppu

(An eloquent speech of C.N. Anna Durai)

Unit : 5 Study of History of Siddha medicine –Selected portion from the Siddha literature.

Topics:- Siddharkalenpor jaar?- Pathinen Siddharkal – Navanaatha Siddharkal – Siddha Maruthuvathin Chirappukkal – Siddha Maruthuva Varalaru in brief – Iyankum Porudkalum Iyankaarudkalum. (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.

Unit : 7 Translation from Tamil to Regional language or English –and Vice versa.

#### References Books:

Sl.No.	Name of book, Language, publishers & year of publication	Author
1.	Thottakkiramaaraichiyummaruthuvavaralarum.	Dr. Uthamarayan
2.	Siddha maruthuvangachurukkam	Dr. Uthamarayan
3.	Siddha vaidhyathirattu	Dr. Uthamarayan
4.	PathinensiddhargalvaralarumPadaithanoolgalum	Murugesan
5.	Siddhargal, Thamarainoolagam, Chennai –26.	

#### Note:

Internal Oral Test to be conducted at the end of the course.



**CENTRAL COUNCIL OF INDIAN MEDICINE**  
**SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. COURSE**

**3. COMMUNICATIVE ENGLISH**

**Objective of the Course**

To enable the students of Siddha medicine, to write and speak in flawless English.

To acquaint the students with Basic English grammar so that they may express their ideas in correct English.

**Syllabus**

The syllabus is divided into four parts namely Grammar, Vocabulary, Spoken English and Written communication.

India being a multi-lingual country, the communication ability in English will help the students to spread the message of Siddha medicine nationally and internationally.

A good command of English will help the students in their research programmes.

**UNIT I**

**Grammar**

- Components of a sentence
- Positive and Negative statements
- Interrogative statements
- Verb and Tense forms
- Voice
- Reported Speech
- Common errors

**Vocabulary**

- Proper use of words, question words
- Idioms and phrases
- Words commonly misused

**Spoken English**

- Oral Exercises given at the end of every lesson
- Teaching the use of dictionaries
- Using words in their own sentences

**UNIT II**

**Written communication**

- Letter writing
- Précis writing
- Expansion of proverbs using the hints
- Story writing using given hints
- Comprehension Exercises
- Dialogue writing

There are about 85 lessons covering all the objectives stated. Two or more skills are interwoven in a single lesson. The following is the broad outline of topics to be handled. Details of the components to be included for the exam and the marks allotted

<b>GRAMMAR</b>		
1.	Proper usage of tense, present, past, future etc	5 marks
2.	Agreement of verb with subjects (singular, plural,)	5 marks
3.	Affirmative into negative and question	5 marks
4.	Preposition	5 marks
5.	Articles	5 marks
6.	Conjunctions (so that, too .to, unless, if, since, for etc)	5 marks
7.	Voice	5 marks
8.	Direct and Indirect Speech	5 marks
9.	Adverb, adjective ( Using them in sentences of their own)	5 marks
10.	Rewriting sentences without errors	5 marks
11	Using question words and question tags	10 marks
	<b>Total</b>	<b>60 marks</b>
<b>CONTINUOUS WRITING</b>		
1.	Letter Writing	5 marks
2.	Precise	5 marks
3.	Comprehension Poem	5 marks
4.	Comprehension Passages	5 marks
5.	Expansion of hints - Proverbs	5 marks
6.	Story Building with hints	10 marks
7.	Dialogue writing	5 marks
	<b>Total</b>	<b>40 marks</b>

The following is the broad suggestion of topics which can be handled in classes with suitable amendment. Exercises based on the topics also have been provided which can be used with addition of extra material by the creative teacher.

Lesson 1 Simple Present Tense

Lesson 2 Present Tense

Lesson 3 Present Tense

Lesson 4 Present Tense

Lesson 5 Present Tense Question form

Lesson 6 Present tense negative statements

Lesson 7 Answers (positive and negative) to the questions in present tense.

Lesson 8 Present Tense -Oral drill in interrogative (question) and negative sentences in present tense.

Lesson 9 Revision

Lesson 10 Simple past tense

Lesson 11 Simple Past

Lesson 12 Past Tense

Lesson 13 Past tense..Question (Interrogative)

Lesson 14 Past tense –affirmative (yes) and negative (No) answers to the questions.

Lesson 15 Past tense –Affirmative and negative replies to the questions

Lesson 16 Past Tense ---Statements and Questions

Lesson 17 Past Tense Revision

Lesson 18 Present perfect tense

Lesson 19 Present perfect tense ---Questions

Lesson 20 Past perfect tense

Lesson 21 Past Perfect Tense using 'after' and 'before'

Lesson 22 Past Perfect tense --; Use of 'when' and 'but'

Lesson 23 Present continuous tense

Lesson 24 Present continuous negative

Lesson 25 Past continuous tense

Lesson 26 Past continuous tense questions

Lesson 27 Questions and answers Past continuous tense

Lesson 28 Present Perfect Continuous tense

Lesson 29 Present Perfect Continuous negative

Lesson 30 Present Perfect Continuous tense questions

Lesson 31 Future tense

Lesson 32 Future Tense-Negative

Lesson 33 Verb and tense

Lesson 34 Revision

Lesson 35 Noun

Lesson 36 Verb

Lesson 37 Proper use of Verb

Lesson 38 Revision

Lesson 39 Verb –Mixed Exercise

Lesson 40 Adjectives

Lesson 41 Adverb

Lesson 42 Noun, Verb, Adjective and Adverb

Lesson 43 Article

- Lesson 44 Prepositions
- Lesson 45 Conjunctions
- Lesson 46 So that, too/to
- Lesson 47 Exercises in Conjunction—because and although
- Lesson 48 Unless and if
- Lesson 49 Errors
- Lesson 50 Question words
- Lesson 51 Can, may, able to
- Lesson 52 Voice
- Lesson 53 Direct and Indirect Speech
- Lesson 54 Revision

**UNIT II**

- 1. Letter writing
- 2. Precise writing
- 3.A. Expansion of hints - Proverbs
- 3.B. Expansion of hints -Stories
- 4.A. Dialogue writing
- 4.B. Dialogue writing
- 5.A. Comprehension –Poem
- 5.B. Comprehension -Passage

**Reference Books:**

Sl. No.	Name of book, Language, publishers & year of publication	Author
1.	High school English grammar and composition	Wren and Martin

# CENTRAL COUNCIL OF INDIAN MEDICINE

## SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. COURSE

### 4. UYIR VEDHIYAL (BIOCHEMISTRY)

#### 1. Chemistry of Carbohydrates:

Functions of Carbohydrates, Classification of Carbohydrates, Classification and biomedical importance of mono saccharides, Reactions of mono saccharides, Classification and Bio medical importance of disaccharides, Polysaccharides- Classification, composition and function.

#### 2. Chemistry of Lipids:

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

#### 3. Chemistry of Proteins :

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:

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:

Degradation of purine nucleotides, Gout.

#### 6. Metabolism of carbohydrates:

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

#### 7. Metabolism of proteins:

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

#### 8. Metabolism of Lipids:

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

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

#### 10. Enzymes:

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.**

**12. Haemoglobin:**

Structure of haemoglobin, Biosynthesis of heme, Degradation of heme. Clinical significance of Glycosylated Haemoglobin, Jaundice

**13. Vitamins:**

Fat soluble Vitamins and Water soluble vitamins –food source, RDA, biochemical functions and deficiency, Manifestations.

**14. Hormones: Biochemical functions and disorders.**

**15. Minerals:**

Macro Elements and Micro Elements–food source, RDA, biochemical functions and deficiency, Manifestations

**16. Metabolism of Xenobiotics (Detoxification).**

**17. Water and electrolytes:**

Functions of water, water turn over and balance, Composition of electrolytes in the body fluids.

**18. Nutrition:**

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:**

Cancer –Etiology and tumour markers. AIDS –Transmission of HIV and Lab Diagnosis.

**20. Organ function tests:**

Liver function tests, Renal function tests, Thyroid function tests.

**PRACTICAL**

**PART A. Qualitative Analysis:**

**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**

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**

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

#### **PART D: SPOTTERS**

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**

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:**

<b>S.No.</b>	<b>Name of book, Language, publishers &amp; year of publication</b>	<b>Author</b>
1.	Biochemistry	U.Satyanarayana, U.Chakrapani
2.	Text book of biochemistry	D.M. Vasudevan, Sreekumari. S
3.	Biochemistry	PankajaNaik
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



# CENTRAL COUNCIL OF INDIAN MEDICINE

## SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. COURSE

### 5. MARUTHUVA THAVARAIYAL (MEDICINAL BOTANY AND PHARMACOGNOSY)

#### Chapter -I:

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.

#### Chapter-II:

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

**Chapter –III:**

Study of following anatomical structures: Idealised plant cell structure, cell organelles and cell inclusion Dicot leaf, stem and root Monocot leaf, stem and root

**Chapter –IV:**

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-1:**

Study of organized raw drugs based on their morphology:

Roots and Rhizomes

Woods

Barks and Galls

Leaves

Flowers

Fruits

Seeds

Whole plant

**Unit -2:**

Study of unorganized raw drugs:

Gums

Resins and types

Fixed oils

**Unit -3**

Phyto chemistry (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, Anthocyanin

**Unit-4:**

Adulteration of raw drugs & detection, Poisonous plants. Basics of Herbal drug standardization.

**Practicals**

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

**References Books:**

Sl. 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. Narayanaswamyet. al.
3.	Plant Ecology, S. Chand & Co	Sharma
4.	A Text Book of Botany - Angiosperms, Rastogi Publishers, Meerut	V. Singh, Pande & Jain
5.	Botany Vol – I & II (Tamil) -Elangovan Publishers Medicinal	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, NiraliPrakashan, Pune	Gokhaleet. al.
10.	Practical Pharmacognosy, VallabhPrakasham, Delhi – 34	Dr. C.K. Koate

**CENTRAL COUNCIL OF INDIAN MEDICINE**  
**SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. COURSE**

**6. NUNNUYIRIYAL (MICROBIOLOGY)**

**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 culture methods
6. Sterilization and disinfection
7. Antimicrobial sensitivity

**Systemic Bacteriology**

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. Corynebacteriumdiphtheriae
8. Mycobacterium - Tuberculosis and Leprosy
9. Spirochaetes - Treponema&Leptospira
10. Mycoplasma, Chlamydiae&Rickettsiae

**Immunology**

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**

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

### **Virology**

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**

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

### **Practical**

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

### **Reference Books:**

<b>Sl. No.</b>	<b>Name of book, Language, publishers &amp;year of publication</b>	<b>Author</b>
1.	Text Book of Microbiology	Ananthanarayan and C.K. JayaramPaniker
2.	Text Book of Microbiology	D.R. Arora and B Arora
3.	Medical Microbiology	Robert Cruik Shank 7