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

(PRESCRIBED BY NCISM)

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

(SUBJECT CODE : SIDUG – MT)

Maruthuva Thavaraviyal (Medicinal Botany and Pharmacognosy)

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

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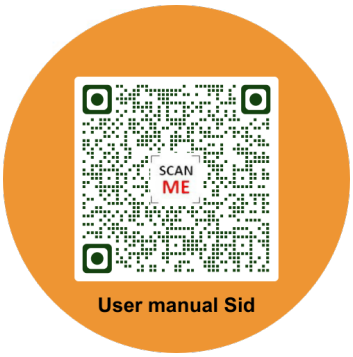

BOARD OF UNANI, SIDDHA AND SOWA-RIGPA
NATIONAL COMMISSION FOR INDIAN SYSTEM OF MEDICINE
NEW DELHI-110058

NCISM

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

Subject Code : SIDUG – MT

Summary

Total number of Teaching hours: 200			
Lecture hours(LH)-Theory		**80**	**80(LH)**
Paper I	80		
Non Lecture hours(NLH)-Theory		**120**	**120(NLH)**
Paper I	36		
Non Lecture hours(NLH)-Practical			
Paper I	84		

Examination (Papers & Mark Distribution)					
Item	**Theory Component Marks**	**Practical Component Marks**			
		Practical	**Viva**	**Elective**	**IA**
Paper I	100	100	30	----->---	20
Sub-Total	100	150			
Total marks	250				

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

PREFACE

Maruthuva Thavaraviyal (Medicinal Botany) is an applied Medical Science of Botany. Numerous Medicinal plants are used for treating diseases in the Siddha system. Medicinal Plants are considered a treasure trove of therapeutic compounds that can be used in drug development. Learning Medicinal Botany has become inevitable for Siddha students and doctors for the correct identification of medicinal plants that are used in various Siddha herbal formulations. Medico-ethnobotany emphasizes the documentation of oral herbal traditions, which leads to Ethnopharmacological research in drug discovery programs. Pharmacognosy and Phytochemical studies give credibility to identify resource plants and their therapeutic uses in the Siddha system. Plants serve as the source of many Indian medicines and modern medicine. Taxonomy is probably the oldest form of science since human existence. Learning the taxonomic classification of medicinal plants in their respective plant families enables BSMS students to appreciate the key characteristic features pertaining to the family and plant. Field identification trips stimulate students' curiosity and experience-based learning of medicinal plants. It helps to understand the various landscapes, natural habitats, and habits of medicinal plants. Field trips and tours inculcate the habit of conserving medicinal plants and collecting them in a sustainable way. Medicinal Botany helps to understand the biodiversity of medicinal plants and their link between people, animals, and the environment. Various parts of plant drugs in the form of roots, barks, stems, seeds, flowers, rhizomes, etc. are studied in organized drugs. The secondary metabolites of plants are well studied in phytochemical and histochemical analyses. The powder drug analysis helps to detect adulteration of raw drugs and also study the unique diagnostic characteristics of a particular plant drug. Plant anatomy deals with the micro-sectioning of plant parts and observing their microscopical characters, which are almost distinct and constant for each and every plant. The Thin Layer Chromatography study enables the students to understand the phytochemical profile of a plant. Standardization and herbal drug regulations play an important role in the manufacture and marketing of Siddha herbal formulations. The outcome of this Medicinal Botany syllabus will enable the BSMS students to formulate genuine herbal Siddha medicines for their clinical practice, to establish the Siddha pharmaceutical drug industry through Research and Development, to be involved in new drug development, to patent their formulations, and to strengthen their academics and careers.

INDEX

Course Code and Name of Course

Course code	Name of Course
SIDUG–MT	Maruthuva Thavaraviyal (Medicinal Botany and Pharmacognosy)

Table 1- Course learning outcomes and matched PO

SR1 CO No	A1 Course learning Outcomes (CO) SIDUG – MT At the end of the course SIDUG – MT, the students should be able to-	B1 Course learning Outcomes matched with program learning outcomes.
CO1	Appraise the values of herbal plants in Siddha science and discover the Traditional Knowledge of Ethnic communities.	PO1,PO10
CO2	Demonstrate the characters of Medicinal plants and Raw drugs by their Organoleptic and Microscopic characters	PO1,PO9,PO11
CO3	Categorize different families with Taxonomical identification of Medicinal Plants.	PO11,PO12
CO4	Analyze the Phytochemicals present in plants and their Therapeutic properties.	PO5,PO9
CO5	Appraise the Ecological adaptations and Conservation of Medicinal plants in their natural habitat with their IUCN status/NMPB guidelines.	PO11,PO12
CO6	Discuss Standardization, Quality assurance, regulations and guidelines of Herbal drugs in accordance with WHO/AYUSH.	PO7,PO11,PO12

Table 2 : Contents of Course

Paper 1					
Sr. No	**A2 List of Topics**	**B2 Term**	**C2 Marks**	**D2 Lecture hours**	**E2 Non-Lecture hours**
1	**Traditional systems of Medicine** 1. History and Importance of Medicinal Plants in Siddha Science. 2. Medico-Ethnobotanical study of Indigenous and Traditional Systems of Medicine	1	6	1	1
2	**Taxonomy of Angiosperms- I** 1. Morphology of Angiosperms. 2. Bentham and Hooker's System of Classification and Angiosperm Phylogeny Group (APG) Systems of Classification. 3. Diagnostic, Vegetative and Reproductive Characters of the following families – A special mention about its medicinal plants, their active principles and therapeutic values. • Annonaceae • Menispermaceae • Capparidaceae • Malvaceae • Rutaceae • Fabaceae, • Caesalpiniaceae • Mimosaceae	1	17	20	10
3	**Taxonomy of Angiosperms-II** 1. Diagnostic, Vegetative and Reproductive Characters of the following families - A special mention about its medicinal plants, their active principles and therapeutic values.	2	20	20	7

	• Combretaceae • Myrtaceae • Cucurbitaceae • Apiaceae • Rubiaceae • Asteraceae • Apocynaceae • Asclepiadaceae • Convolvulaceae • Solanaceae • Acanthaceae • Verbenaceae • Lamiaceae				
4	**Taxonomy of Angiosperms-III** 1. Diagnostic, Vegetative and Reproductive Characters of the following families - A special mention about its medicinal plants, their active principles and therapeutic values. • Euphorbiaceae • Zingiberaceae • Liliaceae • Poaceae	3		5	2
5	**Plant Anatomy** 1. Structure of a Plant cell and Tissues (Simple and Complex Permanent tissues). 2. A basic knowledge of Wood and Bark formation. 3. Anatomical study of the following drugs • Transverse Section of the Roots of *Asparagus racemosus* and *Piper longum* • Transverse Section of the Stems of *Boerhavia diffusa* and *Tinospora cordifolia* • Transverse section of the Leaves of *Cassia angustifolia* and *Justicia adhatoda*	3	7	6	3
6		3	7	4	3

	Ecology and Conservation of Medicinal Plants 1. A basic knowledge of the ecological habitats and distribution of Medicinal Plants. 2. Conservation of Extant and Endangered Medicinal Plants (*in-situ* and *ex-situ* conservation methods) 3. Production of Secondary Metabolites through Plant Bio-Technology				
7	**Pharmacognosy - I** 1. Study of Organized Raw drugs based on their Morphology • Roots and Rhizomes • Stems, Woods and Barks • Leaves and Flowers • Fruits and Seeds	1	17	4	2
8	**Pharmacognosy - II** 1.Study of organized and un-organized Raw Drugs • Galls and whole plants • Resins and their types • Gums and Latex • Fixed oils. • 2. Phytochemistry and Pharmacological Actions of the following Secondary Metabolites: • Glycosides – Anthraquinone, Cardiac and Saponin glycosides • Alkaloids – Indole, Quinoline and Tropane alkaloids • Tannins – Hydrolysable and Condensed Tannins • Volatile oils • Terpenoids and their types • Flavonoids and their types	2	25	10	5
9	**Pharmacognosy-III**	3		6	3

	1.Study of Organized Raw drugs based on their Morphology • Non flowering plants in Medicine. • **2.Herbal Drug Standardization** • Adulteration in Herbal drugs and its detection methods • Basics of Herbal Drug Standardization (Structural and Analytical standards) • Basic Principles of Chromatographic Techniques; Separation of components by using Thin Layer Chromatography.				
10	**Taxonomy of Angiosperms-IV** 1. Diagnostic, Vegetative and Reproductive Characters of the following families – A special mention about its medicinal plants, their active principles and therapeutic values. • Zygophyllaceae • Meliaceae • Nyctaginaceae • Amaranthaceae • Aristolochiaceae • Plant Nomenclature • Herbarium techniques	1	1	4	0
Total Marks			**100**	**80 hr**	**36 hr**

Table 3: Learning objectives (Theory) of Course

Paper 1									
A3 Course outcome	**B3 Learning Objective (At the end of the session, the students should be able to)**	**C3 Domain/sub**	**D3 Must to know / desirable to know / Nice to know**	**E3 Level Does/ Shows how/ Knows how/ Know**	**F3 T-L method**	**G3 Assessment (Refer abbreviations)**	**H3 Formative/ summative**	**I3 Term**	**J3 Integration**
Topic 1 **Traditional systems of Medicine** **(Lecture :1 hours, Non lecture: 1 hours)**									
CO1	Discuss the History and Ancient literatures of Siddha science and importance of Materia Medica and Pharmacopoeias	CC	DK	KH	L_VC,DIS,IBL,SDL,PL,RLE,SY,FV	P-SUR,QZ ,CL-PR,DEB,CR-W	F&S	I	V-SATV
CO1	Discuss Ethnobotany and Ethnopharmacology of Indigenous Traditional systems of Medicine and summarize the drug discovery	CC	DK	KH	L&GD,PrBL,ML,SIM,	T-EMI,T-CS,P-VIVA,P-EXAM,PRN,QZ,DEB	F&S	I	V-SATV

					KL,LS,PL,SY,FV				
Topic 2 **Taxonomy of Angiosperms- I** **(Lecture :20 hours, Non lecture: 10 hours)**									
CO2	Classify the plants by habit, habitat, lifespan and morphology	CC	DK	KH	L,L&GD,L_VC,FC,PSM,PL,D_L	P-RP,P-ID,DEB	F&S	I	
CO2	Explain the types and Modifications of roots, stem and leaves	CC	DK	KH	L&GD,BS,PBL,PrBL,BL,DG	QZ	F&S	I	
CO3	Differentiate various Phyllotaxy, Inflorescence, floral parts, aestivation, Placentation and fruits	CK	MK	KH	L&PPT,L_VC,FC,PSM,DG	P-VIVA,P-REC,P-ID,QZ,M-CHT	F&S	I	
CO3	Distinguish B&H system and APG System of classification	CK	MK	K	L&GD,PER	T- EW,QZ,DEB	F&S	I	

CO3	Describe and distinguish the following families with the diagnostic, vegetative and reproductive characters: Annonaceae, Menispermaceae, Capparidaceae, Malvaceae, Rutaceae, Fabacea e, Caesalpiniaceae and Mimosaceae	CAP	MK	KH	L&PP T,L_ VC,E DU,SI M,PL	T- EW,T-OBT ,P-VIVA,P-SUR,M-CHT	F&S	I	
CO3	Evaluate the following families with important medicinal plants, active principles and therapeutic values. Annonaceae, Menispermaceae, Capparidaceae, Malvaceae, Rutac eae, Fabaceae, Caesalpiniaceae and Mimosaceae	CAP	MK	KH	L&PP T,L& GD,L _VC, ML	P-VIVA,P-EX AM,P-PRF,QZ	F&S	I	
Topic 3 **Taxonomy of Angiosperms-II** **(Lecture :20 hours, Non lecture: 7 hours)**									
CO3	Separate the following families with the diagnostic, vegetative and reproductive characters. Combretaceae Myrtaceae Cucurbitaceae Apiaceae Rubiaceae As teraceae Apocynaceae Asclepiadaceae Convolvulaceae Solanaceae Acanthaceae Verbenaceae Lamiaceae	CAP	MK	KH	L&PP T,PrB L,PL, PT,D_ L,VIV A	P-EXAM,PRN ,O-QZ,M-CHT,M-POS	F&S	II	
CO3	Evaluate the following families with important medicinal plants, active principles and therapeutic values: Combretaceae Myrtaceae Cucurbitaceae Apiaceae Rubiaceae As teraceae Apocynaceae Asclepiadaceae Convolvulaceae Solanace ae Acanthaceae Verbenaceae Lamiaceae	CAP	MK	KH	L&PP T,L& GD,L _VC,I BL,P T,VIV A,TH	T-OBT,P-VIVA,P-REC	F&S	II	

Topic 4 **Taxonomy of Angiosperms-III** **(Lecture :5 hours, Non lecture: 2 hours)**									
CO3	Describe and distinguish the following families with the diagnostic, vegetative and reproductive characters. Euphorbiaceae, Zingiberaceae, Liliaceae and Poaceae	CAP	MK	KH	L&PPT,BS,PBL,CBL,FC,BL,EDU,RP,LS	T- EW,T- MEQs,P-EXAM,P-ID,PUZ	F&S	III	
CO3	Evaluate the following families with important medicinal plants, active principles and therapeutic values. Euphorbiaceae, Zingiberaceae, Liliaceae and Poaceae	CC	MK	KH	L,L&GD,L_VC,FC,EDU,RLE,DG	P-VIVA,DEB,O-QZ,CR-W,PA	F&S	III	
Topic 5 **Plant Anatomy** **(Lecture :6 hours, Non lecture: 3 hours)**									
CO2	Explain the Structure of a Plant Cell.	CAP	MK	KH	L_VC,BS,BL,D-M,PL,	PRN,P-MOD,QZ,WP,M-CHT	F&S	III	

					D_L				
CO2	Identify the Simple (Parenchyma, Collenchyma, Sclerenchyma) and Complex (Xylem and Phloem) Permanent tissue sytems in microscopical sections.	CC	MK	KH	L_VC ,BL,EDU,SIM	QZ ,CL-PR,WP	F&S	III	
CO2	Explain how does secondary growth (formation of wood and bark) takesplace in dicot stem.	CAP	MK	KH	L&GD,L_VC,IBL,ML,REC	P-VIVA,PRN, C-INT,PA	F&S	III	
CO2	Demonstrate the distinguishing features of the herbal drugs from theT.S of *Asparagus racemosus* root; *Piper longum* root; *Justicia adhatoda* leaf; *Cassia angustifolia* leaf; *Boerhavia diffusa* stem; *Tinospora cordifolia* stem.	CC	MK	KH	L,BS,KL,D_L,PRA,TH	T- MEQs,P-VIVA,P-EXAM,PRN,P-RP,QZ ,RK	F&S	III	
Topic 6 **Ecology and Conservation of Medicinal Plants** **(Lecture :4 hours, Non lecture: 3 hours)**									
CO5	Enlist the Hydrophytic, Xerophytic, Mesophytic, Halophytic and Epiphytic Medicinal plants and describe the characteristic features of them.	CAP	DK	KH	L&PPT,L&GD,BS,FC,BL,SDL,DG,FV	P-VIVA,PRN, WP,COM	F&S	III	
CO5	Explain the methods of ex- situ conservation and in- situ	CC	MK	KH	L&PP	T-CRQs,PRN,	F&S	III	

	conservation and enlist the medicinal plants under the Red data list				T,L&GD,PBL,RLE,TH	P-RP,PUZ,DEB,INT			
CO5	Formulate the secondary metabolites production through bio-technology	CAP	DK	KH	L&PPT,L&GD,BS,SDL,REC,ACT	T-OBT,P-VIVA,QZ ,O-QZ,M-CHT,CR-RED	F&S	III	
Topic 7 **Pharmacognosy - I** **(Lecture :4 hours, Non lecture: 2 hours)**									
CO4	Describe the organoleptic and morphological characters of Roots, rhizomes, barks, woods, leaves, flowers, fruits and seed drugs	CAP	MK	K	L,DIS,CBL,FC,EDU,SIM,LS,PT,DA,FV	T- EW,T- MEQs,T-OBT,PRN,P-MOD,P-POS,P-ID,DEB	F&S	I	H-GMM
CO4	Recall the presence of Phytochemicals and the therapeutic properties of Root, Rizhomes, Stems, Woods and barks, leaves, flowers, fruits and seed drugs.	CAP	MK	KH	L&GD,L_VC,PBL,CBL,Pr	T-EMI,T- MEQs,P-VIVA,P-SUR,P-ID,P-PS,M-CHT,INT,SA	F&S	I	H-GMM

					BL,BL,SDL,GBL,REC				
Topic 8 **Pharmacognosy - II** **(Lecture :10 hours, Non lecture: 5 hours)**									
CO4	Differentiate the un- organized Raw drugs based on their morphological and organoleptic characters: Resin and types, Gums, Fixed oils	CAP	MK	KH	L&PPT,L&GD,L_VC,FC,BL,D	P-VIVA,P-EXAM,P-ID,P-PS,QZ ,CL-PR,C-INT,INT	F&S	II	
CO4	Enumerate properties and therapeutic uses of Glycosides (Cardiac, Anthraquinone, Saponin) Alkaloid (Indole, Tropane, Quinine); , Tannin (Condensed and Hydrolysed) Volatile oil, Flavonoids andTerpenoids	AFT-RES	MK	KH	L&GD,IBL,FC,BL,PL,REC	P-VIVA,P-EXAM,PRN,P-ID	F&S	II	
CO4	Describe the pharmacognostical characters of Galls and whole plants and their medicinal values.	CK	MK	KH	L,DG	T-EMI,P-EXAM,PRN	F&S	II	H-GMM
Topic 9 **Pharmacognosy-III**									

(Lecture :6 hours, Non lecture: 3 hours)									
CO4	Discuss the Medicinal uses of Non-flowering plants (Fungi, Lichen, Algae and Pteridophytes)	CAP	MK	KH	L&PPT,L&GD,L_VC,GBL,PL,TUT	T- EW,T-CRQs,P-VIVA,P-REC,PRN,QZ,DEB,WP	F&S	III	
CO6	Explain the need for Standardizing Herbal Drugs	CAP	MK	KH	L_VC,BS,IBL,PBL,BL,EDU,SDL	T- EW,P-VIVA,P-SUR,P-RP,QZ ,CL-PR,M-MOD,M-CHT,INT	F&S	III	
CO6	Explain the various structural and analytical Parameters in Standardization of herbal drugs	AFT-RES	MK	KH	L&PPT,L&GD,L_VC,BS,BL,EDU	T- EW,P-EXAM,P-PRF,P-SUR,QZ ,M-CHT,INT,SA	F&S	III	
CO6	Explain the technique of Thin Layer Chromatography (TLC) in separation of compounds	CAN	MK	KH	L&GD,L_VC,TBL,KL,PL,PER,D	T- EW,P-VIVA,P-REC,P-EXAM,CL-PR,CR-RED,COM,PA	F&S	III	

Topic 10 **Taxonomy of Angiosperms-IV** **(Lecture :4 hours, Non lecture: 0 hours)**									
CO3	Describe and Evaluate the following families with diagnostic, vegetative and reproductive characters and their medicinal plants: Zygophyllaceae Meliaceae Nyctaginaceae Amaranthaceae Aristolochiaceae	CK	NK	KH	L,PBL,BL,EDU,SDL	P-VIVA,P-EXAM,P-MOD,P-ID	F&S	III	
CO3	**Explain plant nomenclature and Herbarium technique. Enlist the National Herbaria and regional Herbaria.**	CK	NK	K	L,BL,SDL,PL,REC	P-VIVA,P-EXAM,P-SUR,QZ,DEB,INT	F&S	III	

List of Practicals (Term and Hours)

PRACTICALS (Marks-100)			
S.No	**List of Topics**	**Term**	**Hours**
1	**Taxonomy - I**	1	10
2	**Field Visit - I**	1	4
3	**Pharmacognosy I - Study of Organized Raw Drugs**	1	7
4	**Taxonomy - II**	2	15
5	**Field Visit -II**	2	4
6	**Pharmacognosy II - Study of organized and un organized Raw Drugs**	2	3
7	**Ethnobotanical Survey of Medicinal plants.**	3	5
8	**Taxonomy - III**	3	5

9	**Field Visit - III**	3	4
10	**Plant Anatomy of Root drugs**	3	4
11	**Pharmacognosy III - Thin Layer Chromatography**	3	4
12	**Pharmacognosy III - Powder Microscopy**	3	5
13	**Plant Anatomy of Stem drugs**	3	4
14	**Plant Anatomy of Leaf drugs**	3	4
15	**Pharmacognosy III- Histochemical localization**	3	6
16	**Herbarium Preparation and Raw Drugs collection**	3	0

Table 4: Learning objectives (Practical)

A4 Course outcome	B4 Learning Objective (At the end of the session, the students should be able to)	C4 Domain/sub	D4 Must to know / desirable to know / Nice to know	E4 Level Does/ Shows how/ Knows how/ Know	F4 T-L method	G4 Assessment (Refer abbreviations)	H4 Formative/ summative	I4 Term	K4 Integration
Topic 1 **Ethnobotanical Survey of Medicinal plants.**									
CO1,CO2	Acquire the traditional knowledge of Ethnic communities and appraise the values of Medicinal Plants	PSY-ORG	MK	D	RLE, FV	P-SUR	F&S	II	
Topic 2 **Taxonomy - I**									
CO2,CO3	Demonstrate and Illustrate the vegetative and reproductive characters of plant families for identification	PSY-GUD	MK	D	L&PPT,DG, PRA, VIVA	T-EMI,T- EW, P-VIVA,QZ ,CL-PR	S	I	

	1. Annonaceae, 2. Menispermaceae, 3. Capparidaceae, 4. Malvaceae, 5. Rutaceae, 6. Fabaceae, 7. Caesalpiniaceae 8. Mimosaceae								
Topic 3 **Taxonomy - II**									
CO2,CO3	Demonstrate and Illustrate the vegetative and reproductive characters of plant families for identification 1. Combretaceae 2. Myrtaceae 3. Cucurbitaceae 4. Apiaceae 5. Rubiaceae 6. Asteraceae 7. Apocynaceae 8. Asclepiadaceae 9. Convolvulaceae	PSY-GUD	MK	D	RLE, PT,D_L,FV	P-PRF	S	II	

	10. Solanaceae 11. Acanthaceae 12. Verbenaceae 13. Lamiaceae								
Topic 4 **Taxonomy - III**									
CO2,CO3	Demonstrate and Illustrate the vegetative and reproductive characters of plant families for identification. 1. Euphorbiaceae 2. Zingiberaceae 3. Liliaceae 4. Poaceae	PSY-GUD	MK	D	D_L, DG,ACT	P-PRF	S	III	
Topic 5 **Field Visit - I**									

CO1,CO3	Acquire the knowledge of habit, ecological habitat, phenology, topography and correct identification of Medicinal Pants	PSY-ORG	MK	D	DIS,DG,FV,ACT	P-VIVA,P-SUR	F	I	
Topic 6 **Field Visit -II**									
CO1,CO3	Acquire the knowledge of habit, ecological habitat, phenology, topography and correct identification of Medicinal Pants	PSY-ORG	MK	D	RLE,DG,FV,ACT	P-SUR	F	III	
Topic 7 **Field Visit - III**									
CO1,CO3	Acquire the knowledge of habit, ecological habitat, phenology, topography and correct identification of Medicinal Pants	PSY-ORG	MK	D	DIS,RLE,DG,FV,ACT	P-SUR	S	II	
Topic 8 **Plant Anatomy of Root drugs**									

CO2	Perform microsectioning and elucidate the specific anatomical characters of *Asparagus racemosus* and *Piper longum* roots and any other root drugs.	PSY-MEC	MK	D	D_L	P-RP	S	I	
Topic 9 **Plant Anatomy of Stem drugs**									
CO2	Perform microsectioning and elucidate the specific anatomical characters of *Boerhavia diffusa* and *Tinospora cordifolia* stems and any other drugs.	PSY-ORG	MK	D	D_L,PRA	P-RP	S	II	
Topic 10 **Plant Anatomy of Leaf drugs**									
CO2	Perform microsectioning and elucidate the specific anatomical characters of *Cassia angustifolia* and *Justicia adhatoda* leaf and any other leaf drugs.	PSY-SET	MK	D	D_L	P-RP	S	III	
Topic 11									

Pharmacognosy I - Study of Organized Raw Drugs									
CO2	Perform the comparative organoleptic characters (Taste, Colour, Smell, Touch) and macroscopic examinations (Size, shape, Fractures, cracks, external markings like wrinkles, scars, ridges and furrows, lenticels) of the medicinally important root drugs, rhizomes, barks, stem and wood, flowers, fruits and seed drugs.	PSY-GUD	MK	SH	PrBL,W,RLE,D_L	SA	S	I	
Topic 12 **Pharmacognosy II - Study of organized and un organized Raw Drugs**									
CO2	Perform the comparative organoleptic characters (Taste, Colour, Smell, Touch) and macroscopic examinations (Size, shape, Fractures, cracks, external markings like wrinkles, scars, ridges and furrows, lenticels) of the medicinally important galls and whole plant drugs.	PSY-GUD	MK	D	D	PUZ	S	I	
	Perform the comparative organoleptic characters (Taste, colour, smell, touch etc) and the macroscopic examinations (Size, shape and form) of the un-organized Raw drugs.	PSY-ADT	MK	KH	D_L	P-EXAM	F&S	III	
Topic 13 **Pharmacognosy III - Powder Microscopy**									

CO6	Detect the Histological structures in the given plant drug powder to find the genuineness of herbal drugs 1. *Glycyrrhiza glabra* root 2. *Withania somnifera* root 3. *Zingiber officinale* rhizome 4. *Andrographis paniculata* leaf 5. *Justicia adhatoda* leaf 6. *Cinnamomum verum* bark	PSY-MEC	MK	D	PT,D_L	P-EXAM	S	II	
CO6	Perform the comparative microscopic examination of genuine and adulterated any two samples from Root/ rhizome/Stem/ Leaf/ Bark/flower/fruit/ seed drugs.	PSY-GUD	MK	KH	TUT, PT,D_L	P-EXAM,P-RP,P-PS	F&S	III	
Topic 14 **Pharmacognosy III- Histochemical localization**									
CO2	Detect and demonstrate the presence or absence of Secondary metabolites in the given plant specimen. i) Alkaloid ii) Flavonoid iii) Tannins, Phenols	PSY-MEC	MK	SH	PT,D_L	P-ID	S	II	V-RM

	iv) Terpenoid v) Glycoside								
Topic 15 **Pharmacognosy III - Thin Layer Chromatography**									
CO6	Perform the Thin Layer Chromatography techniques to get the chemical profiles of herbal drugs	PSY-MEC	MK	SH	PT,D_L	P-ID	S	III	V-RM
Topic 16 **Herbarium Preparation and Raw Drugs collection**									
CO1,CO2,CO3	Perform Herbarium preparation and recognise medicinal plants used in siddha science	PSY-MEC	MK	SH	ACT	P-EXAM	S	III	

Table 4a: List of Practical

S.No	Name of practical	Term	Activity	Practical hrs
1	**Ethnobotanical Survey of Medicinal plants.**	3	Survey and interview the Ethnic community of their locality to know ethnomedicinal plants and prepare a presentation (Video, audio, Photos (with geo-tagged) and other data.	5
2	**Taxonomy - I**	1	Observation of vegetative characters with the fresh specimens and Dissection of flowers to make illustrative diagrams of families - 1. Annonaceae 2. Menispermaceae 3. Capparidaceae 4. Malvaceae 5. Rutaceae 6. Fabaceae 7. Caesalpiniaceae 8. Mimosaceae	10
3	**Taxonomy - II**	2	Observation of vegetative Characters of Families and Dissection of flowers for making illustrative diagrams of the families 1. Combretaceae 2. Myrtaceae 3. Cucurbitaceae 4. Apiaceae 5. Rubiaceae 6. Asteraceae 7. Apocynaceae 8. Asclepiadaceae 9. Convolvulaceae 10. Solanaceae 11. Acanthaceae 12. Verbenaceae 13. Lamiaceae	15
4	**Taxonomy - III**	3	Observation of vegetative characters of fresh plant specimens and Dissection of flowers to to make illustrative diagrams of the families	5

			1. Euphorbiaceae 2. Zingiberaceae 3. Liliaceae 4. Poaceae	
5	**Field Visit - I**	1	1. Two, one day visits to a nearby place, exclusive for identifying Medicinal Plants and to study their phenological characters. Survey and record in Field notebook. 2. Plant identification through Networks: PlantNet, iNaturalist, Flora Incognita, LeafSnap, Plantifier, Google Lens etc. **SOP for all Field Visits.** **Dress Code**: Students must wear dresses as advised by the faculties and closed-toe shoes, a hat or cap for sun protection and appropriate weather protections such as jackets or raincoats. **Essential Materials**: Each participant should carry a water bottle, a stick (optional), materials for sample collection (field notebook, field magnifier, newspaper, blotting paper, secateurs, plastic bags), a cap, goggles, and a packed lunch or snacks in a suitable container. **Safety Precautions:** Conduct a safety briefing before the visit, outlining emergency procedures, and emphasizing expected behaviors during the trip. **Itinerary**: Develop a detailed itinerary with activities and a timeline, considering the objectives of the visit. **Public Address System (PA System):** Provide a portable PA system with a microphone, amplifier, and power source for effective communication with larger groups if necessary. **Responsible Usage**: Use the PA system judiciously, speaking clearly and at an appropriate volume, while encouraging participants to utilize the system for questions or clarifications. **Follow-up Activities:** Conduct post-visit discussions and assignments to reinforce learning, encourage knowledge sharing, and facilitate deeper exploration.	4

			Review and Revise: Regularly update and adapt this SOP to comply with safety standards, educational objectives, and local regulations. **Ensure the collecting activity do not pose significant threat to the survival of the endemic, endangered and threatened species.**	
6	**Field Visit -II**	2	Field visit to a different locality for not less than two days, exclusive for identifying Medicinal Plants and to study their phenological characters. Survey, Record in Field notebook, Collection of commonly available medicinal plant specimens for Herbarium.	4
7	**Field Visit - III**	3	A one day visit to a nearby place, exclusive for identifying Medicinal Plants and to study their phenological characters. Survey, Record in Field notebook, Collection of commonly available medicinal plant specimens for Herbarium.	4
8	**Plant Anatomy of Root drugs**	3	Sectioning of the given raw Drug root specimens, observation of the unique characters of the drugs and make illustrative diagrams 1. *Asparagus racemosus* 2. *Piper longum*	4
9	**Plant Anatomy of Stem drugs**	3	Sectioning of the given Raw Drug stem specimens, observation of the unique characters of the drugs and make illustrative diagrams. 1. *Boerhavia diffusa* 2. *Tinospora cordifolia*	4

10	**Plant Anatomy of Leaf drugs**	3	Sectioning of the given raw Drug Leaf specimens, observation of the unique characters of the drugs and make illustrative diagrams 1. *Cassia angustifolia* 2. *Justicia adhatoda*	4
11	**Pharmacognosy I - Study of Organized Raw Drugs**	1	Observe and record the Pharmacognostical Characters (Organoleptic and Morphological) of the Raw Drugs for identification. 1. Roots and Rhizomes 2. Stems, Woods and Barks 3. Leaves and flowers 4. Fruits and seeds	7
12	**Pharmacognosy II - Study of organized and un organized Raw Drugs**	2	Observe and record the Pharmacognostical characters of the given organized and un-organized Raw Drugs for identification. 1. Galls and Whole Plants 2. Resins and Gums	3
13	**Pharmacognosy III - Powder Microscopy**	3	Perform Powder Microscopy and detect the specific Histological structures in the given plant drug powder. 1. *Justicia adhatoda* leaf 2. *Cinnamomum verum* bark 3. *Withania somnifera* root 4. *Andrographis paniculata* leaf 5. *Glycyrrhiza glabra* root 6. *Zingiber officinale* rhizome	5

14	**Pharmacognosy III- Histochemical localization**	3	Histochemical localization (locate the phytochemicals present in the microsection) on the given plant specimen through sectioning: i) Alkaloid ii) Flavonoid iii) Tannins, Phenols iv) Terpenoid v) Glycoside	6
15	**Pharmacognosy III - Thin Layer Chromatography**	3	Perform TLC chromatography and find the Rf value.	4
16	**Herbarium Preparation and Raw Drugs collection**	3	• Preparations of Digital Herbarium of minimum 20 medicinal Plants depicting all parts of the plant (with Geo-tag photos) by compulsory field visit. • Herbarium Preparation • Collection of Raw Drugs • (Plants and Plant drugs can be collected during Field visits) • **Ensure the collecting activity do not pose significant threat to the survival of the endemic, endangered and threatened species.**	0
			Total Hr	**84**

Activity

CO	Topic name	Activity Details	Hours#
CO1	Traditional System of Medicine	1.**Video**: Showing relevant videos regarding ethnic people, traditional practices by local people etc. 2. **Field visit**: Theme based - Plan the visit based on specific theme (Disease based). Field visit can be untertaken at their native district during the vacation period. 3. Collaborate with the local experts, gather and	1

		report the Ethno medico-botanical informations.	
CO3	Taxonomy of Angiosperms	1. Demonstration and identification of the medicinal plants in the College garden 2. Referring Regional Floras for identification 3. Visit Botanical Gardens 4. Collection of Medicinal plants in the given Families for Herbarium 5. Segregation of plant specimens based on characters and therapeutic action. Ex. Plants with free or fused petals, inferior or superior ovary; Plants used for specific diseases etc. 6. GBL-Identification of medicinal plants by giving clues, puzzles etc. 7. Create Herbarium 8. Photo Documentation of Medicinal plants	10
CO3,CO4	Taxonomy of Angiosperms	1. Field Visit: Classify the live plants based on morphological characters, (ex. characters of sepal, petal, stamens and gynoecium, Inflorescence types etc) in the garden. 2. Quiz –Should be generated on morphology of plants, classifications, family characters and therapeutic uses of plants. 3. Brain storming - Activity should be assigned to the students to search in Local Floras for identification of Medicinal Plants	9
CO2	Plant Anatomy	1. Handling and fixing the Focal length of the Microscope 2. Section cutting, staining, mounting, focusing and demonstration of raw drug microscopic	3

		speimens 3. Chart preparations	
CO5	Ecology and Conservation of Medicinal Plants	1. Study the ecological distribution of Medicinal plants during field visits. 2. Activity by students on ecology and conservation of medicinal plants in the Natural habitat. 3. Contribution and involvement in conserving Medicinal Plants inside the College campus.	3
CO2	Pharmacognosy	1. Discussion on Morphological features of the given Raw Drugs. 2. Debate on the Phytochemicals and Therapeutic Actions of the Assigned Raw Drugs. 3. Game based activity: by closing the eyes the students should be asked to identify the drug by its taste, smell, touch etc. 4. Activity based learning: Enlisting the drugs of specific taste,smell, action etc. by Matching activity. 5. Medicinal Plant Databases for e-Learning: IMPPAT (Indian Medicinal Plants Phytochemistry And Therapeutics, Medicinal Plant Database by BSI, e Flora of India, Database on Medicinal Plants used in Ayurveda and Siddha by AYUSH, Traditional Knowledge Digital Library (TKDL) by NISCAIR, Indian Medicinal Plants Database (IMPD) by FRLHT, Duke's Phytochemical database, PubMed, Scholarly articles etc.	7
CO6	Pharmacognosy and Herbal Drug Standardization	1. Macroscopic and Microscopic identification of genuine and adulterated drugs - Minimum 2 samples from Root/ Stem/ leaf/ bark/ fruit/ seed. 2. Collect the Raw Drugs from local vendors to assess the quality. 3. Flipped classroom-Mobile based learning –Searching about pharmacology in enlisted websites	3

		4. Self directed learning - Review by Library reading 5. Critical Reading of Published Journals, Monographs, etc.	

Hours indicated are included in calculations of Table 3 and 4

Table 5- Teaching learning method

Sr No	Teaching learning methods in the course	No of Activities
1	Lecture	6
2	Lecture with Power point presentation	11
3	Lecture & Group Discussion	15
4	Lecture with Video clips	15
5	Discussions	2
6	Brainstorming	8
7	Inquiry-Based Learning	4
8	PBL	6
9	CBL	3
10	Project-Based Learning	4
11	TBL	1
12	Flipped classroom	6
13	Blended Learning	10
14	Edutainment	8
15	Mobile learning	3
16	Simulation	4
17	Role plays	1
18	Self-directed learning	7
19	Problem solving method	2
20	Kinesthetic Learning	3
21	Game-Based Learning	2

22	Demo on Model	1
23	Library Session	3
24	Peer learning	9
25	Real life experience	3
26	Recitation	4
27	Symposium	2
28	Tutorial	1
29	Presentations	2
30	Practical	3
31	Drug analysis	1
32	Demonstration	1
33	Demonstration Lab	4
34	Demonstration Garden	4
35	Field visit	4
36	Activity	1
37	Practical	1

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

6 A-Number of Papers and Marks Distribution

Subject Code	Papers	Theory	Practical/Clinical Assessment					
			Practical	Viva	Elective	IA	Sub Total	Grand Total
SIDUG – MT	1	100	100	30	0	20	150	250

6 B - Scheme of Assessment (formative and Summative)

PROFESSIONAL COURSE	DURATION OF PROFESSIONAL COURSE		
	First Term (1-6	Second Term (7-12	Third Term (13-18

	Months)	Months)	Months)
Second	3 PA & First TT	3 PA & Second TT	3 PA & UE

PA: Periodical Assessment; **TT:** Term Test; **UE****:** University Examinations.
** University Examination shall be on entire syllabus

6 C - Calculation Method for Internal assessment Marks

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

6 D - Evaluation Methods for Periodical Assessment

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

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

6 E Question Paper Pattern

II PROFESSIONAL B.S.M.S EXAMINATIONS
SIDUG – MT
PAPER-1
Time: 3 Hours Maximum Marks: 100
INSTRUCTIONS: All questions compulsory

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

Similar for Paper II

6 F Distribution of theory examination

Paper 1						
Sr. No	**A List of Topics**	**B Term**	**C Marks**	**MCQ (1 Mark)**	**SAQ (5 Marks)**	**LAQ (10 Marks)**
1	**Traditional systems of Medicine**	1	6	Yes	Yes	No
2	**Taxonomy of Angiosperms- I**	1	17	Yes	Yes	Yes
3	**Taxonomy of Angiosperms-II**	2	20	Yes	Yes	Yes
4	**Taxonomy of Angiosperms-III**	3		Yes	Yes	Yes
5	**Plant Anatomy**	3	7	Yes	Yes	No
6	**Ecology and Conservation of Medicinal Plants**	3	7	Yes	Yes	No
7	**Pharmacognosy - I**	1	17	Yes	Yes	Yes
8	**Pharmacognosy - II**	2	25	Yes	Yes	Yes

9	**Pharmacognosy-III**	3		Yes	Yes	Yes
10	**Taxonomy of Angiosperms-IV**	1	1	Yes	No	No
Total Marks			**100**			

6 G Blue print of paper I

Paper No:1		
Question No	**Type of Question**	**Question Paper Format**
Q1	**Multiple choice Questions** **20 Questions** **1 mark each** **All compulsory** **Must know part - 15 MCQ** **Desirable to know - 3 MCQ** **Nice to know part - 2 MCQ**	1. **Traditional systems of Medicine** 2. **Taxonomy of Angiosperms- I** 3. **Taxonomy of Angiosperms- I** 4. **Taxonomy of Angiosperms-II** 5. **Taxonomy of Angiosperms-II** 6. **Taxonomy of Angiosperms-II** 7. **Taxonomy of Angiosperms-II** 8. **Taxonomy of Angiosperms-III** 9. **Plant Anatomy** 10. **Plant Anatomy** 11. **Ecology and Conservation of Medicinal Plants** 12. **Ecology and Conservation of Medicinal Plants** 13. **Pharmacognosy - I** 14. **Pharmacognosy - I** 15. **Pharmacognosy - II** 16. **Pharmacognosy - II** 17. **Pharmacognosy - II** 18. **Pharmacognosy-III** 19. **Pharmacognosy-III** 20. **Taxonomy of Angiosperms**-IV

Q2	**Short answer Questions** **Eight Questions** **5 Marks Each** **All compulsory** **Must know - 7 SAQ** **Desirable to know - 1 SAQ** **No questions on Nice to know**	1. **Traditional systems of Medicine** 2. **Taxonomy of Angiosperms- I** 3. **Taxonomy of Angiosperms-III** **/** **Taxonomy of Angiosperms-II** 4. **Plant Anatomy** 5. **Ecology and Conservation of Medicinal Plants** 6. **Pharmacognosy - I** 7. **Pharmacognosy - II** 8. **Pharmacognosy-III**
Q3	**Long answer Questions** **Four Questions** **10 marks each** **All compulsory** **All questions on must know. No Questions on** **Nice to know and Desirable to know**	1. **Taxonomy of Angiosperms- I** 2. **Taxonomy of Angiosperms-III** **/** **Taxonomy of Angiosperms-II** 3. **Pharmacognosy - I** 4. **Pharmacognosy-III** **/** **Pharmacognosy - II**

6 H Distribution of Practical Exam

S.No	Heads	Marks
1	Describe the Morphological characters of the Medicinal plants. - 20 Mins	15
2	Identification of the family of Medicinal plants by Flower Dissection method - 30 Mins	18
3	Perform Microsectioning and Identify the given plant drug specimen - 25 Mins	10
4	Identify the given dried Plant Raw drugs - 30 Mins	20
5	Detection of Histological structures in the given Plant drug powder (or) Find out the Phytoconstituents in the Plant Specimen (microsection) by Histochemical localization - 25 Mins	7
6	Demonstrate Thin Layer Chromatography(TLC) for the given plant extract and calculate the Rf values - 50 Mins	10
7	1. Attend Field visit, Create Herbarium (15 Medicinal Plants) and Collect Raw Drugs (25 Raw Drugs) - (10 marks) 2. Make a Record of the Practicals (10 marks)	20
8	Viva - Voce	30
9	Internal Assessment	20
Total Marks		**150**

References Books/ Resources

S.No	Book	Resources
1	College Botany Ed. 2000. (Unit 2, 3, 4, 5 and 6)	Gangulee et al. 3 volumes. New Central Book Agency Pvt. .Ltd.
2	Outlines of Botany Ed. 2003 (Units 2, 3, 4, 5 and 10)	V. Narayanaswamy et al. S. Viswanathan Publishers.
3	A Textbook of Botany (Units 2, 3,4 and 10)	V. Singh, Pande & Jain Rastogi Publishers.
4	Medicinal Botany (Units 2, 3, 4 and 10) & 7,8, and 9)	S. Somasundaram. Vol-1 & II (Tamil) Elangovan Publishers.
5	Taxonomy of Angiosperms (Tamil) (Units 2, 3 ,4 and 10)	S. Palaniappan V.K. Publishing House, Chennai.
6	Taxonomy of Angiosperms and Economic plants and Medicinal plants used in Siddha & Ayurveda and Siddha system of medicine. 2023 (Units 2,3,4and 10)	Prof. Dr. S. Somasundaram Elangovan Publishers, Tirunelveli
7	Medicinal Botany (Maruthuva Thavaraviyal) Taxonomy of Angiosperms and Pharmacognosy. 2023 (Units 1 to10).	S. Sutha, Kings Academic Publishers. Tirunelveli.
8	Textbook of Pharmacognosy (Units 7,8, and 9)	Gokhale et.al. Nirali prakashan Publishers.
9	Medical Taxonomy of Angiosperms, Recent trends in Medical used and chemical constituents. (Units 2,3,4 and 10)	S. Sankaranarayanan Harishi Publication, Chennai.
10	Text book of Pharmacognosy. (Units 7 and 9)	**T.E.Wallis.CBS Publishers**

11	Text Book of Ethnobotany, 2012. (Unit1)	P. G. Sharma. Pearl Books, New Delhi,
12	A Manual of Ehtonobotany, 1987, (Unit 1)	S. K. Jain, Scientific Publishers, Jodhpur, India.
13	Practical Pharmacognosy, 1995. (Units 7,8, and 9)	Kokate, C.K., Khandelwal K.R., Pawar, A.P. and Gohale, S.B, ,3rd edn. Nirali Prakashan, Pune
14	Ethnobotany and Medicinal Plants of India, 2000. (Unit 1)	Maheswari, J.K.
15	Text Book of Pharmacognosy & Phytochemistry, 2014 (Unit 7,8 and 9)	Biren N. Shah and A.K. Seth Elsevier Publishers.
16	A Text Book of Plant Ecology, 2005. (Unit 6)	Dr. R.S. Shukla and Dr. P.S. Chandel S. Chand Publishers.
17	Mooligai Thavarangalin Mukkiyathuvamum athan Vethi Porutkalum, 2009. (Unit 7)	S. Sankaranarayanan. Harishi Publications
18	The Flora of the Presidency of Madras. 1915 (Unit 1-4 & 10)	J. S. Gamble. Volumes I - III.
19	The Flora of the British India 1875. (Units 1-4 & 10)	Hooker J.D. 7 Volumes.
20	The Flora of the Palni Hills. (units 1-4 &10)	Mathew K.M 1999. (Vol 1-3). Rapinat Herbarium, Trichy
21	Illustratios on the Flora of the Palni Hills (units 1-4 & 10)	Mathew, K.M. The Rapinat Herbarium Trichy.
22	Forest Plants of the Nilgiris. *A pictorial Field Guide*.(units 1-4 & 10)	4 Volumes. Keystone Foundation

Domain

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

T L method

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

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

Assessment

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

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