Course curriculum for Second Professional BAMS

(PRESCRIBED BY NCISM)

शास्त्रं ज्योतिः प्रकाशार्थं दर्शनं बुद्धिरात्मनः।
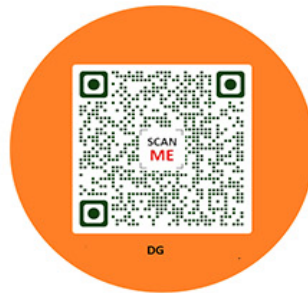
Dravyaguna Vigyan

(SUBJECT CODE : AyUG-DG)

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

।। आयुषे सर्वलोकानाम् ।।

BOARD OF AYURVEDA
NATIONAL COMMISSION FOR INDIAN SYSTEM OF MEDICINE
NEW DELHI-110058

II Professional Ayurvedacharya (BAMS)

Subject Code : AyUG-DG

Summary

<table>
<tr><td colspan="4">Total number of Teaching hours: 400</td></tr>
<tr><td colspan="2">Lecture hours(LH)-Theory</td><td rowspan="3">150</td><td rowspan="3">150(LH)</td></tr>
<tr><td>Paper I</td><td>75</td></tr>
<tr><td>Paper II</td><td>75</td></tr>
<tr><td colspan="2">Non Lecture hours(NLH)-Theory</td><td rowspan="4">250</td><td rowspan="4">250(NLH)</td></tr>
<tr><td>Paper I & II</td><td>75</td></tr>
<tr><td colspan="2">Non Lecture hours(NLH)-Practical</td></tr>
<tr><td>Paper I & II</td><td>175</td></tr>
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<table>
<tr><td colspan="6">Examination (Papers & Mark Distribution)</td></tr>
<tr><td rowspan="2">**Item**</td><td rowspan="2">**Theory Component Marks**</td><td colspan="4">**Practical Component Marks**</td></tr>
<tr><td>**Practical**</td><td>**Viva**</td><td>**Elective**</td><td>**IA**</td></tr>
<tr><td>Paper I</td><td>100</td><td rowspan="2">100</td><td rowspan="2">70</td><td rowspan="2">-</td><td rowspan="2">30</td></tr>
<tr><td>Paper II</td><td>100</td></tr>
<tr><td>Sub-Total</td><td>200</td><td colspan="4">200</td></tr>
<tr><td>Total marks</td><td colspan="5">400</td></tr>
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Important Note:-The User Manual II BAMS 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

The Bachelor of Ayurveda education shall produce graduates having profound knowledge of Ashtanga Ayurveda. One of the chatushpada has been mentioned is Dravya. The revised syllabus of Dravyaguna along with the contemporary advances supplemented with knowledge of scientific and technological advances in Dravyaguna along with extensive practical training

Fundamentals of Dravyaguna involves a thorough knowledge of various principles and concepts of Rasapanchaka (fivefold analysis of medicinal substances) and Karma (pharmacological action). It refers to classical Ayurvedic texts, provides suitable examples, and includes contemporary interpretations to facilitate better understanding.Most commonly used dravyas by clinicians are included in curriculum.

The current syllabus focuses greater emphasis on understanding the fundamentals with a scientific interpretation and clinical application. The repetitive topics such as Ahara varga, Nighantu, and Jangama dravyas is avoided since they are covered in Samhita adhyayana (study of classical texts), Itihasa (history), and ethical considerations related to the clinical use of animal-origin drugs.

Additionally, newer areas in Ayurveda related to medicinal plants, such as cultivation techniques, collection methods, and various regulatory guidelines from organizations like NMPB (National Medicinal Plants Board), CCRAS (Central Council for Research in Ayurvedic Sciences), API (Ayurvedic Pharmacopoeia of India), GCTM (Global Centre for Traditional Medicine), PCIMH (Pharmacopoeia Commission for Indian Medicine & Homoeopathy), pharmacovigilance, Vrikshayurveda (science of plant life), Ethno medicine, Network pharmacology, and Bioinformatics, have been incorporated. This information is crucial for the sustainable use of medicinal plants and a better understanding of their properties.

Practical sessions in Dravyaguna focus on understanding fundamental concepts such as Mahabhuta (five elements), Guna (properties), Rasa (taste), and Virya (potency) with Parameters commonly used in physicochemical analysis.The curriculum also addresses challenges faced by the herbal drug industry, including the issue of adulteration, by incorporating quality check parameters. Furthermore, the students gain practical experience in plant identification through visits to various natural and cultivated plant habitats.

The revised curriculum for Dravyaguna reflects commitment to equipping students with the knowledge and skills necessary to excel in the field of Ayurvedic pharmacology. Hope that this curriculum will inspire and empower students to become proficient Ayurvedic practitioners who can contribute to the holistic well-being of individuals and society as a whole.

INDEX

Course Code and Name of Course

Course code	Name of Course
AyUG-DG	Dravyaguna Vigyan

Table 1- Course learning outcomes and matched PO

SR1 CO No	A1 Course learning Outcomes (CO) AyUG-DG At the end of the course AyUG-DG, the students should be able to-	B1 Course learning Outcomes matched with program learning outcomes.
CO1	Demonstrate the application of principles of *Dravyaguna* in clinical practice.	PO1,PO2,PO8
CO2	Analyze and justify the fundamental principles of *Dravyaguna* in relevance to contemporary sciences.	PO1
CO3	Analyze and interpret *Rasa Panchaka* of *Dravya* with their application in clinical practice.	PO5,PO9
CO4	Interrelate the knowledge on Karma (pharmacological actions) with *Rasa panchaka* and basic contemporary clinical pharmacology.	PO2
CO5	Demonstrate and Justify the ability to select the specific *Dravyas*, Prashata Bheshaja with different dosage forms in different clinical conditions.	PO3,PO7,PO9
CO6	Demonstrate knowledge of quality control methods of drug.	PO3
CO7	Demonstrate knowledge and skills about *Apamishrana* (adulterants), *Abhava pratinidhidravya* (substitutes), *Prashastabheshaja* (ideal drug) and plant extracts.	PO5,PO6
CO8	Identify the medicinal plants and orient about conservation, cultivation, sustainable utilization & Pharmacovigilance	PO4,PO6
CO9	Demonstrate fundamental principles of applied Pharmacology.	PO2

Table 2 : Contents of Course

Paper 1 Fundamental Dravyaguna					
Sr. No	A2 List of Topics	B2 Term	C2 Marks	D2 Lecture hours	E2 Non-Lecture hours
1	**1.Dravyaguna Vigyana**	1	1	1	1
2	**2.Dravya** • 2.1 Panchabhoutikatwa of Dravya • 2.2 Classification of Dravya based on Utpattibheda,Yonibheda, Prayogabheda, Prabhavbheda, Doshaghnabheda, Rasabheda and Karmbheda	1	6	5	4
3	**3. Guna** • 3.1 Panchabhoutikatva, characteristics and classification • 3.2 Gurvadiguna and its karma on Dosha, Dhatu and Mala, clinical application and research updates • 3.3 Paradiguna with examples, clinical applications and research updates	1	11	4	2
4	**4. Rasa** • 4.1 Meaning of "Rasa" in various contexts • 4.2 Shadrasa in relative correlation with taste of chemical constituents • 4.3 Rasotpatti and Panchabhoutika constitution of Shadrasa • 4.4 Rasopalabdhi and pathway of taste perception & sites of taste receptors in the body • 4.5 Rasa -Lakshana, Guna & Karmas of each Rasa on Dosha, Dhatu and Mala • 4.6 Atiyogalakshana, • 4.7 Clinical application and Research updates of Shadrasa • 4.8 Anurasa • 4.9 Rasa Sevanakrama of Aushadha	1	11	7	4

5	**5. Vipaka**	1	6	3	1
	• 5.1 Trividha Vipaka • 5.2 Vipak karma on Dosha, Dhatu and Mala • 5.3 Clinical application and Research updates • 5.4 Vipakopalabdhi (Determination of Vipaka) & Taratamya (Degree of variation)				
6	**6. Virya**	1	6	2	2
	• 6.1 Difference between Guna and Virya • 6.2 Karmas of Virya on Dosha, Dhatu and Mala • 6.3 Clinical application and Research updates • 6.4 Viryaopalabdhi (Determination of Virya) and understanding of Virya with respect to actions of active constituents				
7	**7. Prabhava**	1	5	2	1
	• 7.1 Samanapratyayarabdha and Vichitrapratyayarabdha • 7.2 Clinical application of Prabhava and Research updates				
8	**8. Interrelation of Rasa-Guna-Virya-Vipaka-Prabhava**	1	1	1	2
	• Interrelation of Rasa-Guna-Virya-Vipaka-Prabhava with respect to their strength- Pharmacodynamics				
9	**9. Karma**	1	11	9	5
	• **9. Individual Karma, correlation with contemporary pharmacological action, examples, clinical application and research updates** • 9.1 Deepana • 9.2 Pachana				

- 9.3   Samshodhana
- 9.4   Samshamana
- 9.5   Anulomana
- 9.6   Sransana
- 9.7   Bhedana
- 9.8   Rechana
- 9.9   Chhedana
- 9.10   Lekhana
- 9.11   Grahi
- 9.12   Sthambhana
- 9.13   Madakari
- 9.14   Pramathi
- 9.15   Abhishyandi
- 9.16   Vyavayi
- 9.17   Vikashi
- 9.18   Rasayana
- 9.19   Vajeekarana
- 9.20   Medhya

10	**10. Karmas of Dashemani Gana**	1	5	12	3
11	**11. Principles of General Pharmacology**	3	20	15	1

- **11 Drug definition, drug dosage forms, route of drug administration, pharmacokinetics (ADME), pharmacodynamics, Drug dose, principles of drug action, mechanism of drug action & bio-availability**
- **11.1 Drugs Acting on Central Nervous System:** Anaesthetics, Sedative Hypnotics, Antiepileptics, Antiparkinsonian, Antidepressants, Antianxiety Drugs, Opioid - Analgesics Drugs
- **11.2 Drugs Acting on Peripheral (somatic) Nervous   System: Skeletal Muscle Relaxants, Local Anaesthetics**
- **11.3 Autacoids and Related Drugs:** Nonsteroidal, Anti-inflammatory (NSAIDs)/Antipyretic and Analgesics Drugs
- **11.4 Drugs for Respiratory Disorders:**Bronchodilators, Aerosols/ Inhalants Expectorants, Antitussive Drugs
- **11.5 Cardiovascular Drugs:** Antihypertensive, Antianginal Drugs
- **11.6 Drugs Acting on Kidney:** Diuretics
- **11.7 Drugs Affecting Blood:** Haematinics, Coagulants, Anticoagulants, Hypolipidaemic Drugs

	• **11.8 Gastrointestinal Drugs:** Antacid, Carminatives, Digestants, Antiemetics, Laxatives, Antidiarrhoeal, Hepatoprotective Drugs • **11.9 Antibacterial Drugs:** Antibiotics, Antitubercular Drugs • **11.10 Antifungal, Antiviral, Antimalarial and Antihelmintic Drugs** • **11.11 Hormones and Related Drugs:** Thyroid Hormone, Thyroid Inhibitors, Insulin, Oral Anti-diabetic, Hormonal Contraceptives, Uterine Stimulants, Uterine Relaxants Drugs • **11.12 Miscellaneous Drugs:** Antiseptics and Disinfectants, Vaccines, Vitamins, Water imbalance and IV fluids				
12	**12. Mishraka Gana** • **12. Mishrakagana: its composition, guna karma and therapeutic uses.** • **12.1 Brihatpanchamoola.** • **12.2 Laghupanchamoola.** • **12.3 Vallipanchamoola.** • **12.4 Kantakapanchamoola.** • **12.5 Trinapanchamoola.** • **12.6 Panchavalkala.** • **12.7 Triphala.** • **12.8 Trikatu.** • **12.9 Trimada.** • **12.10 Chaturusana.** • **12.11 Panchakola.** • **12.12 Shadusana** • **12.13 Chaturbeeja.** • **12.14 Trijataka.** • **12.15 Chaturajataka.** • **12.16 Panchatikta.** • **12.17 Chaturbhadra.** • **12.18 Trikarshika.**	3	6	6	2
13	**13. Nomenclature of dravya as per Nighantu, Vedic taxonomy and Botany**	3	1	0	2
14	**14. Prashasta Bheshaja, Bheshaja Pariksha and drug evaluation method with correlation as per Pharmacognosy**	3	1	1	2

15	**15. Dravyasangrahana and Drug collection methods as per GFCP (Good Field collection practices)**	3	1	1	0
16	**16. GCP (Good cultivation practices), seed bank, conservation of medicinal plants, knowledge about RET (Rear, Endangered & Threatened) medicinal plants.**	3	1	1	0
17	**17. Abhava Pratinidhi Dravya (substitutes)**	3	1	1	1
18	**18. Classifications and techniques of aqueous and alcoholic extracts**	3	1	0	2
19	**19. Adverse drug reaction and Pharmacovigilance with recent updates**	3	1	1	2
20	**20. NMPB (National Medicinal Plant Board), CCRAS (Central Council of Research in Ayurveda Sciences), API (Ayurvedic Pharmacopeia of India), GCTM (Global Centre for Traditional Medicine), PCIMH (Pharmacopeia Commission of Indian Medicine and Homeopathy)**	3	1	1	0
21	**21. Vrikshayurveda and Ethno-medicine**	3	1	1	1
22	**22. Network pharmacology and Bioinformatics**	3	2	1	1
Total Marks			**100**	**75 hr**	**39 hr**

Paper 2 Applied Dravyaguna					
Sr. No	A2 List of Topics	B2 Term	C2 Marks	D2 Lecture hours	E2 Non-Lecture hours
23	**1. Bheshajavacharaniya (Criteria's to be considered for selection of drugs in vyadhis)**	2	5	1	6
24	**2.1 Dravya (Drug) Nama-Guna-Karma Jnana**	2	55	45	10

- Amalaki
- Aragwadha
- Arjuna
- Ashoka
- Ashwagandha
- Ativisha
- Bala
- Beejaka
- Bhallataka
- Bharangi
- Bhrungaraja
- Bhumyamalaki
- Bilva
- Brahmi
- Chandana
- Chitraka
- Dadima
- Dhataki
- Dhamasa
- Eranda
- Gokshura
- Guduchi
- Guggulu
- Haridra
- Haritaki
- Hingu
- Jambu
- Jatamansi
- Jyotishmati
- Kanchanara
- Kantakari
- Kapikachhu
- Karkatshrungi
- Katuki
- Khadira
- Kumari
- Kutaja
- Latakaranja
- Lodhra
- Agnimanth
- Ahiphena (NK)
- Ajamoda *(DK)*
- Apamarga (DK)
- Asthishrunkhala
- Bakuchi
- Bruhati
- Chakramarda
- Dhanyaka
- Ela
- Gambhari

	• Japa • Jatiphala • Jeeraka (DK) • Kalamegha • Kampillaka • Kulatha *(NK)* • Kumkum • Lajjalu • Lavanga				
25	**2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana** • Madanphala • Mandukaparni • Manjishta • Maricha • Meshashrungi • Methika • Musta • Nagkeshar • Nimba • Nirgundi • Palasha • Pashanabheda • Patha • Pippali • Punarnava • Rasna • Rasona • Sarapagandha • Sairayak • Sariva • Shallaki • Shalmali(Mocharasa) • Shankhapushpi • Shatavari • Shigru • Shunthi • Talisapatra *(NK)* • Trivrut • Tulasi • Twak • Usheera • Vacha • Varuna • Vasa • Vatsanabha	3	40	29	20

	• Vibhitaki • Vidanga • Yashtimadhu				
Total Marks			**100**	**75 hr**	**36 hr**

Table 3: Learning objectives (Theory) of Course

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 Form ative/ summ ative	I3 Term	J3 Integr ation
Paper 1 Fundamental Dravyaguna									
Topic 1 1.Dravyaguna Vigyana (Lecture :1 hours, Non lecture: 1 hours)									
CO1,CO3	Define Dravyaguna Vigyana.	CK	MK	K	L&PPT	P-VIVA	F&S	I	
CO1,CO3	Explain the role of Dravyaguna Vigyana in clinical practice.	CC	MK	KH	L&GD	P-VIVA,C-INT	F&S	I	
Topic 2 2.Dravya (Lecture :5 hours, Non lecture: 4 hours)									
CO1,CO5,CO8	Classify Dravya based on Utpatti,Yonibheda, Prayogabheda & Prabhavbheda.	CK	MK	K	L&PPT,LS	T-OBT,P-VIVA,P-POS	F&S	I	
CO1,CO5,CO8	Classify Dravya based on Doshaghnabheda, Rasabheda, Karmbheda (Dashemani & Sushrutokta Gana)	CK	MK	K	L&PPT,LS	T-OBT,P-VIVA,P-POS	F&S	I	
CO1,CO3	Describe Panchabhoutikatwa of Dravya.	CC	MK	KH	DIS,PER	T- EW,T-OBT,P-VIVA	F&S	I	
Topic 3 3. Guna (Lecture :4 hours, Non lecture: 2 hours)									

CO1,CO2,CO3	Define Guna and describe its Panchabhoutikatva.	CK	MK	K	L&PPT,DIS,LS	T- EW,P-VIVA,PRN,QZ	F&S	I
CO1	State characteristics of Gurvadi Guna.	CK	MK	K	L&PPT,SDL	P-VIVA,PRN,QZ	F&S	I
CO1,CO2,CO3	Discuss Gurvadiguna in context to its Karma on Dosha, Dhatu and Mala with examples.	CC	MK	KH	L&PPT,L&GD,FC	T- EW,P-VIVA,PRN,OSPE	F&S	I
CO1,CO2,CO3	Enumarate & Summarize, clinical application of Gurvadi Guna with research updates.	CC	MK	KH	L&GD,BL,LS	T- EW,P-VIVA,PRN	F&S	I
CO1,CO2,CO3	Enlist Paradiguna with examples.	CK	MK	K	L&GD,PER	T-EMI,P-VIVA,PRN,P-POS	F&S	I
CO1,CO2,CO3	Interpret clinical applications of Paradiguna.	CAP	MK	KH	L&PPT,DIS	T-EMI,P-VIVA,PRN,QZ	F&S	I
CO1,CO2,CO3	Discuss research updates of Paradiguna.	CC	MK	KH	L,TPW,LS	T-EMI,P-VIVA,PRN,CR-RED	F&S	I
Topic 4 4. Rasa (Lecture :7 hours, Non lecture: 4 hours)								
CO1,CO2,CO3	Define Rasa and interpret Meaning of "Rasa" in various contexts.	CK	MK	K	L&GD	P-VIVA,PUZ,M-CHT,INT	F&S	I
CO1,CO2	Classify and compare shadarasa in relative correlation with taste of chemical constituents.	CK	MK	K	L&PPT,ED	P-VIVA,PUZ,M-CHT,INT	F&S	I

					U				
CO1,CO2	State Rasa Utpatti and Panchabhoutika constitution of Shadrasa.	CK	MK	K	L&GD,PER	P-VIVA,PUZ,M-CHT,INT	F&S	I	
CO1,CO2	Discuss Rasopalabdhi.	CC	MK	KH	L&GD,SDL	P-VIVA,PUZ,M-CHT,INT	F&S	I	
CO1,CO2,CO3	Interpret pathway of taste perception & sites of taste receptors in the body	CC	MK	KH	L&PPT,L_VC	T- EW,T-OBT,P-VIVA,PRN,PUZ,INT	F&S	I	
CO1,CO2	Describe Guna and Lakshana of each Rasa.	CC	MK	KH	L&PPT	T-EMI,T- EW,P-VIVA,PRN,INT	F&S	I	
CO1,CO2	Explain karma of each rasa on Dosha, Dhatu and Mala with examples.	CC	MK	KH	L&PPT,BS	T-EMI,T- EW,P-VIVA,PUZ,M-CHT,INT	F&S	I	
CO1,CO2	Discuss Atiyoga of each rasa.	CC	MK	KH	L&PPT,PBL,PER	T-EMI,P-VIVA,PRN,PUZ,INT	F&S	I	
CO1,CO2,CO3	Interpret Clinical application of each rasa.	CAP	MK	KH	L&PPT,DIS,SDL,LS	T-EMI,T- EW,T-OBT,P-VIVA,INT	F&S	I	
CO1,CO2	Discuss research updates of Shadrasa.	CC	MK	KH	DIS,SDL,LS	T- EW,P-VIVA,PUZ,INT,CR-RED	F&S	I	

CO									
CO1,CO2	Define Anurasa.	CK	MK	K	L,LS	T-EMI,P-VIVA,INT	F&S	I	
CO1,CO2	Interpret relevance of Anurarasa in clinical practice.	CAP	MK	KH	L&GD,FC	T-EMI,P-VIVA,PUZ,INT	F&S	I	
CO1,CO2	Describe with justification Rasa sevanakrama as Aushadha.	CC	MK	KH	L&PPT,DIS	T-EMI,T- EW, P-VIVA,PRN, M-CHT,M-POS	F&S	I	
Topic 5 5. Vipaka (Lecture :3 hours, Non lecture: 1 hours)									
CO1	Define Vipaka.	CK	MK	K	L	P-VIVA	F&S	I	
CO1	State Vipaka lakshana.	CK	MK	K	L&GD	P-VIVA,INT	F&S	I	
CO1	Describe the action of Trividha Vipaka on Dosha, Dhatu and Mala with examples.	CC	MK	KH	L&PPT,TPW,FC	T- EW,P-VIVA,PRN	F&S	I	
CO1,CO3	Interpret clinical application of Vipaka.	CAP	MK	KH	L&PPT,DIS,SDL,LS	P-VIVA,QZ	F&S	I	
CO2	State Research updates of Vipaka.	CK	MK	K	L&PPT	P-VIVA,CR-RED	F&S	I	
CO1	Explain Vipakopalabdhi (Determination of Vipaka) and Taratamya (Degree of variation).	CC	MK	KH	L&PPT,FC	P-VIVA,PUZ, M-CHT	F&S	I	
Topic 6 6. Virya (Lecture :2 hours, Non lecture: 2 hours)									
CO1	Define the lakshanas of Virya.	CK	MK	K	L,SD	P-VIVA,INT	F&S	I	

					L			
CO1	Differentiate Guna and virya.	CC	MK	KH	L&PPT,RP	P-VIVA,P-EXAM,O-QZ	F&S	I	
CO1	Discuss Karma of Virya on Dosha, Dhatu and Mala.	CC	MK	KH	L&PPT,SDL,PL	P-VIVA,O-QZ,M-CHT	F&S	I	
CO1,CO3	Explain clinical application of Virya.	CC	MK	KH	L&PPT,GBL,TUT	P-VIVA,O-QZ,INT	F&S	I	
CO2	Discuss research updates of Virya.	CC	MK	KH	L&GD,DIS,SDL	P-VIVA,P-EXAM,O-QZ,CR-RED	F&S	I	
CO1	Discuss Viryaopalabdhi (Determination of Virya).	CC	MK	KH	L&GD	P-VIVA,QZ	F&S	I	

Topic 7 7. Prabhava (Lecture :2 hours, Non lecture: 1 hours)

CO1	Define and explain Prabhava with examples.	CC	MK	KH	L&PPT	P-VIVA	F&S	I	
CO1	Describe Samanapratyayarabdha and Vichitrapratyayarabdha with examples.	CC	MK	KH	L&PPT,DIS,TBL,BL	T- EW,P-VIVA,INT	F&S	I	
CO3	Explain clinical application of Prabhava.	CC	MK	KH	L&GD,FC,LS	T- EW,P-VIVA,CR-RED	F&S	I	

| CO1,CO2 | Discuss research updates of Prabhava. | CC | MK | KH | L&GD,SDL | T- EW,P-VIVA,CR-RED | F&S | I | |

Topic 8 8. Interrelation of Rasa-Guna-Virya-Vipaka-Prabhava (Lecture :1 hours, Non lecture: 2 hours)

| CO1 | Interpret the interrelation of Rasa-Guna-Virya-Vipaka-Prabhava with respect to their strength- Pharmacodynamics. | CAP | MK | KH | L&PPT,TPW,PL | P-VIVA,CL-PR | F&S | I | |

Topic 9 9. Karma (Lecture :9 hours, Non lecture: 5 hours)

CO1	Define Karma.	CK	MK	K	L	T-OBT,P-VIVA,QZ	F&S	I	
CO1	Discuss Karma lakshana.	CC	MK	KH	L&GD	T-OBT,P-VIVA,QZ	F&S	I	
CO1,CO2,CO4,CO5	Explain Deepan karma in relation with Appetizers.	CC	MK	KH	L&GD,BL	T- EW,T-OBT,P-VIVA,QZ	F&S	I	
CO1,CO2,CO3,CO4	Critically analyze Deepan dravyas with its gunas and application in various clinical conditions.	CAP	MK	KH	L&PPT,PBL,GBL	T-OBT,P-VIVA,QZ,DEB	F&S	I	
CO1,CO2,CO3,CO4	Explain Pachan karma in relation with Digestives.	CC	MK	KH	L&PPT	T-OBT,P-VIVA,QZ	F&S	I	
CO1,CO2,CO3,CO4	Critically analyze Pachan dravyas with gunas and discuss its application in various clinical conditions.	CAN	MK	KH	L&PPT,PBL,PER	T-EMI,T-OBT,P-VIVA	F&S	I	
CO1,CO2,CO	Explain Samshodhan karma in relation with contemporary	CC	MK	KH	L_VC	T-OBT,P-	F&S	I	

4	pharmacological action.				,PL	VIVA,QZ		
CO1,CO3,CO4	Discuss Samshohan karma and its clinical application.	CC	MK	KH	PBL, RP,PER	T- EW,T-CS,T-OBT,P-VIVA	F&S	I
CO1,CO2,CO3,CO4	Explain Samshamana karma in relation with contemporary pharmacological action.	CC	MK	KH	L&GD,BL	T-EMI,T-OBT,P-VIVA	F&S	I
CO1,CO2,CO3,CO4	Describe Samshamana karma and its clinical application.	CC	MK	KH	L&PPT,CBL,PL	T-EMI,T-CS,P-VIVA,QZ	F&S	I
CO1,CO2,CO3	Explain Anuloman karma in relation with Carminative.	CC	MK	KH	L_VC,DIS	T-EMI,T-OBT,P-VIVA,DEB	F&S	I
CO1,CO3	Describe Anuloman karma and its clinical application.	CC	MK	KH	L&PPT,PBL,LS	T-OBT,P-VIVA,QZ	F&S	I
CO1,CO2,CO3,CO4	Explain Sransana karma in relation with contemporary pharmacological action.	CC	MK	KH	L&PPT	T-EMI,T-OBT,P-VIVA,DEB	F&S	I
CO1,CO3	Discuss Sransan karma and its clinical application.	CC	MK	KH	L&PPT,PBL,LS	T-OBT,P-VIVA,QZ,DEB	F&S	I
CO1,CO2,CO3,CO4	Explain Bhedana karma in relation with strong laxative action	CC	MK	KH	L_VC,FC	T-EMI,T-OBT,P-VIVA,DEB	F&S	I
CO1,CO3	Discuss Bhedan karma and its clinical application.	CC	MK	KH	L&PPT,DIS	T-OBT,P-VIVA,QZ	F&S	I
CO1,CO2,CO3,CO4	Explain Rechan karma in relation with Purgative.	CC	MK	KH	L&PPT	T-EMI,T-OBT,P-VIVA	F&S	I

CO1,CO3	Discuss Rechan karma and its clinical application.	CC	MK	KH	L&PPT,DIS	T-OBT,P-VIVA,QZ	F&S	I	
CO1,CO3	Discuss Chhedan karma and its clinical application.	CC	MK	KH	L&PPT,CBL,LS	T-EMI,T-OBT,P-VIVA	F&S	I	
CO1,CO2,CO3,CO4	Explain Lekhan karma in relation with contemporary pharmacological action.	CC	MK	KH	L&GD,BL	T-EMI,T-OBT,P-VIVA	F&S	I	
CO1,CO3	Discuss Lekhan karma and its clinical application.	CC	MK	KH	L&PPT,DIS,PL	T-OBT,P-VIVA,QZ,DEB	F&S	I	
CO1,CO2,CO3,CO4	Explain Grahi karma in relation with contemporary pharmacological action bowel binding.	CC	MK	KH	L_VC	T-EMI,T-OBT,P-VIVA	F&S	I	
CO1,CO3	Discuss of Grahi karma and its clinical application.	CC	MK	KH	L&GD,TBL	T-OBT,P-VIVA,QZ	F&S	I	
CO1,CO2,CO3,CO4	Explain Stambhan karma in relation with contemporary pharmacological action.	CC	MK	KH	L&PPT,FC	T-EMI,T-OBT,P-VIVA,DEB	F&S	I	
CO1,CO3	Discuss Stambhan karma and its clinical application.	CC	MK	KH	L&GD,PBL	T-EMI,T-OBT,P-VIVA,DEB	F&S	I	
CO1	Discuss Madakari karma with examples.	CC	MK	KH	L,DIS	T-OBT,P-VIVA,QZ	F&S	I	
CO1,CO3	Discuss Pramathi karma and its clinical application.	CC	MK	KH	L&PPT,DIS	T-EMI,T-OBT,P-VIVA	F&S	I	
CO1	Discuss Abhishyandi karma with examples.	CK	MK	K	L,DIS	T-EMI,T-OBT	F&S	I	

					,P-VIVA,DEB			
CO1	Discuss Vyavayi karma with examples.	CC	MK	KH	L,PER	T-EMI,T-OBT ,P-VIVA,DEB	F&S	I
CO1	Discuss Vikashi karma with examples.	CC	MK	KH	L,DIS	T-OBT,P-VIVA,QZ	F&S	I
CO1,CO2	Explain Rasayan karma in relation with Rejuvenators.	CC	MK	KH	L&PPT,DIS ,BL	T-EMI,P-VIVA,QZ	F&S	I
CO1,CO3	Analyze types of Rasayan dravyas with its gunas and discuss its clinical application with research updates.	CAN	MK	KH	L&GD	T-EMI,T-OBT ,P-VIVA,DEB ,CR-RED	F&S	I
CO1,CO2	Explain Vajeekaran karma in relation with Aphrodisiacs.	CC	MK	KH	L&GD,PL	T-OBT,P-VIVA,QZ	F&S	I
CO1,CO2,CO3	Critically Analyze the types of Vajeekaran dravyas with their guna karmas and discuss its clinical application with research updates	CAN	MK	KH	L&PPT,PBL,ML,LS	T-OBT,P-VIVA,QZ ,DEB,CR-RED	F&S	I
CO1,CO2	Explain Medhya karma in relation with contemporary pharmacological actions.	CC	MK	KH	L&PPT	T-EMI,T-OBT ,P-VIVA,DEB	F&S	I
CO1,CO2,CO3	Critically analyze Medhya dravya and discuss its clinical application with research updates.	CAN	MK	KH	L&PPT,PL, PER	T-OBT,P-VIVA,QZ ,WP,CR-RED	F&S	I
Topic 10 10. Karmas of Dashemani Gana (Lecture :12 hours, Non lecture: 3 hours)								
CO1,CO8	Discuss Charakokta Dashemani karmas with their rasa, guna, vipak, virya, dhosha karma, botanical identity & pharmaco-	CC	MK	KH	L&PPT,DIS	P-VIVA,P-REC,QZ ,M-	F&S	I

	therapeutic action of individual drugs.				,FC,R EC	CHT,M-POS			

Topic 11 11. Principles of General Pharmacology   (Lecture :15 hours, Non lecture: 1 hours)

CO4,CO9	Define Pharmacology and discuss Principles of general Pharmacology.	CK	MK	K	L&PP T	PRN,QZ	F&S	I	
CO4,CO9	Discuss drug definition, drug dosage forms and route of drug administration.	CC	MK	KH	L_VC	T- EW,P-VIVA,QZ	F&S	I	
CO4,CO9	Explain pharmacokinetics (ADME) drug and pharmacodynamics.	CC	MK	KH	L_VC ,DIS	P-VIVA,PRN	F&S	I	
CO4,CO9	Discuss Drug dose, Principles of drug action, Mechanism of drug action & Bioavailability	CC	MK	KH	L_VC ,PER	P-VIVA,QZ	F&S	I	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting on CNS with examples of Anaesthetics, Sedative-Hypnotic, Antiepileptic, Antiparkinsonian, Antidepressants, Antianxiety and Opioid Analgesics Drugs	CC	MK	KH	L&PP T,PB L,PrB L,FC	T- EW,T-OBT ,P-VIVA,QZ ,C-INT	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting on Peripheral (somatic) Nervous System with examples of Skeletal Muscle Relaxants and Local Anaesthetics Drugs.	CC	MK	KH	L&PP T,PB L,FC	T- EW,T-OBT ,P-VIVA,QZ	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting on Autacoids and Related of Nonsteroidal Antiinflammatory (NSAIDs), Antipyretic and Analgesics Drug	CC	MK	KH	L&PP T,PB L,FC	T- EW,T-OBT ,P-VIVA,PRN	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting on Respiratory Disorders -	CC	MK	KH	L&PP T,PB	T-OBT,P-VIVA,PRN	F&S	III	

	Bronchodialators, Aerosols/ Inhalants, Expectorants and Anti tussives Drugs				L,BL				
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting on Cardiovascular Drugs as Antihypertensive and Antianginal Drugs	CC	MK	KH	L_VC ,FC	T-OBT,P-VIVA,PRN	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting on Kidney as Diuretics	CC	MK	KH	L&PP T,TP W,BL	T-OBT,P-VIVA,QZ	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting as Haematinics, Coagulants, Anticoagulants and Hypolipidaemic Drugs	CC	MK	KH	L&PP T,PB L,BL	T- EW,T-OBT,P-VIVA	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting on Gastrointestinal tract as Antacid, Carminatives, Digestants, Antiemetics, Laxatives, Antidiarrhoeal and Hepatoprotective Drugs	CC	MK	KH	L&PP T,L& GD,L _VC	T- EW,T-OBT ,P-VIVA,QZ	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting as Antibiotics and Antitubercular.	CC	MK	KH	L&PP T,FC, GBL	T- EW,P-VIVA,QZ	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting as **Antifungal, Antiviral, Antimalarial and Anthelmintic Drugs**	CC	MK	KH	L&PP T,PB L,GB L	T- EW,T-OBT ,P-VIVA,QZ	F&S	III	
CO9	Define, Describe mode of action & Discuss types with examples of following drugs acting on Hormones and Related Drugs as Thyroid Hormone, Thyroid Inhibitors, Insulins, Oral Antidiabetic, Hormonal Contraceptives, Uterine Stimulants and Uterine Relaxants Drugs.	CC	MK	KH	L&PP T,BL, PER	T- EW,T-OBT ,P-VIVA,PRN	F&S	III	

CO9		CC	MK	KH	L&PPT,BL,PER	T- EW,T-OBT,P-VIVA	F&S	III	
	Define, Describe mode of action & Discuss types with examples of following drugs acting on as Antiseptics , Disinfectants, Vaccines, Vitamins, Water imbalance and IV								
Topic 12 12. Mishraka Gana (Lecture :6 hours, Non lecture: 2 hours)									
CO1,CO3	Explain Brihatpanchamoola composition.	CC	MK	KH	L&PPT,EDU	T- EW,P-VIVA,P-POS,QZ,M-CHT	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Brihatpanchamoola.	CC	MK	KH	L&PPT,DIS,TBL	T- EW,P-VIVA,P-POS,QZ,M-CHT	F&S	III	
CO1,CO3	Explain Laghupanchamoola composition.	CC	MK	KH	L&GD	T- EW,P-VIVA,P-POS,QZ,M-CHT	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Laghupanchamoola.	CC	MK	KH	L&PPT,DIS,PL	T- EW,P-VIVA,P-POS,QZ	F&S	III	
CO1,CO3	Explain Vallipanchamoola composition.	CC	MK	KH	L&PPT	T- EW,P-VIVA,P-POS,QZ,M-CHT	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Vallipanchamoola.	CC	MK	KH	L&GD,PER	T- EW,P-VIVA,QZ	F&S	III	
CO1,CO3	Explain Kantakapanchamoola composition.	CC	MK	KH	L&PPT,BS,	T- EW,P-VIVA,QZ	F&S	III	

						TPW			
CO1,CO3	Describe Guna karma and combined therapeutic effect of Kantakapanchamoola.	CC	MK	KH	L&PPT,LS, PER	P-POS,QZ ,M-CHT	F&S	III	
CO1,CO3	Explain Trinapanchamoola composition.	CC	MK	KH	L_VC ,PER	P-VIVA,P-EXAM,QZ	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Trinapanchamoola.	CC	MK	KH	L&PPT,CBL,PL	T- EW,P-VIVA,M-CHT	F&S	III	
CO1,CO3	Explain Panchavalkala composition.	CC	MK	KH	L&PPT,BL, GBL	P-VIVA,P-POS,QZ	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Panchavalkala.	CC	MK	KH	L&PPT,FC	T-CS,T-OBT, P-VIVA,QZ	F&S	III	
CO1,CO3	Explain Triphala composition	CC	MK	KH	L,DIS	T- EW,P-VIVA,P-POS	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Triphala.	CC	MK	KH	L&PPT,PER	T-OBT,P-VIVA,P-EXAM,QZ	F&S	III	
CO1,CO3	Explain Trikatu composition.	CC	MK	KH	L&PPT,PL	T-EMI,P-VIVA,QZ	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Trikatu	CC	MK	KH	L&PPT,PL	T-OBT,P-VIVA,P-POS	F&S	III	
CO1,CO3	Explain Trimada composition	CC	MK	KH	L,DIS	T- EW,P-VIVA,QZ	F&S	III	

CO1,CO3	Describe Guna karma and combined therapeutic effect of Trimada.	CC	MK	KH	L&PPT,DIS,TUT	T- EW,P-VIVA,QZ	F&S	III	
CO1,CO3	Explain Chaturusana composition.	CC	MK	KH	L&PPT	T-OBT,P-VIVA,P-POS	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Chaturusana.	CC	MK	KH	L&PPT,FC	P-VIVA,P-POS,QZ	F&S	III	
CO1,CO3	Explain Panchakola composition.	CC	MK	KH	L&PPT,L_VC	P-VIVA,QZ	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Panchakola.	CC	MK	KH	L&PPT,DIS	T- EW,T-CS,P-VIVA,QZ	F&S	III	
CO1,CO3	Explain Shadusana composition.	CC	MK	KH	L&PPT,PL	T-OBT,P-VIVA,P-POS	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Shadusana	CC	MK	KH	L&PPT,FC	T- EW,P-VIVA,QZ	F&S	III	
CO1,CO3	Explain Chaturbeeja composition.	CC	MK	KH	L&PPT,L_VC	T-OBT,P-VIVA,P-EXAM	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Chaturbeeja	CC	MK	KH	L&PPT,PER	T- EW,P-VIVA,QZ	F&S	III	
CO1,CO3	Explain Trijataka composition.	CC	MK	KH	L_VC,DIS,SDL	T-OBT,P-VIVA,P-EXAM,P-POS	F&S	III	

CO1,CO3	Describe Guna karma and combined therapeutic effect of Trijataka	CC	MK	KH	L&PPT,PL	T- EW,P-VIVA,P-POS	F&S	III	
CO1,CO3	Explain Chaturajataka composition.	CC	MK	KH	L_VC,PER	T-OBT,P-VIVA,QZ	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Chaturajataka.	CC	MK	KH	L&PPT,DIS	T- EW,P-VIVA,P-POS	F&S	III	
CO1,CO3	Explain Panchatikta composition.	CC	MK	KH	L&PPT,FC	T-OBT,P-VIVA,P-REC,QZ	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Panchatikta.	CC	MK	KH	L&PPT,PL	T- EW,P-VIVA,P-POS	F&S	III	
CO1,CO3	Explain Chaturbhadra composition.	CK	MK	K	L,DIS	T-OBT,P-VIVA,QZ	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Chaturbhadra.	CC	MK	KH	L&PPT,FC	T-EMI,P-VIVA,QZ	F&S	III	
CO1,CO3	Explain Trikarshika composition.	CC	MK	KH	L,DIS	T-OBT,P-VIVA,P-EXAM	F&S	III	
CO1,CO3	Describe Guna karma and combined therapeutic effect of Trikarshika.	CC	MK	KH	L&PPT,DIS,PL	T-OBT,P-VIVA,QZ	F&S	III	
Topic 13 13. Nomenclature of dravya as per Nighantu, Vedic taxonomy and Botany (Lecture :0 hours, Non lecture: 2 hours)									
CO1	Describe the Nomenclature of dravya as per Raj Nighantu.	CC	MK	KH	L&PPT,FC, RP	P-VIVA,PRN, P-ID,QZ	F&S	III	
CO1	Explain the Nomenclature of dravya as per Vedic taxonomy.	CC	MK	KH	L&PPT	P-VIVA,P-ID,QZ	F&S	III	

CO1	Discuss the Nomenclature of dravya as per botany.	CC	MK	KH	L&PPT,BL,PER	P-VIVA,P-ID,QZ	F&S	III	

Topic 14 14. Prashasta Bheshaja, Bheshaja Pariksha and drug evaluation method with correlation as per Pharmacognosy (Lecture :1 hours, Non lecture: 2 hours)

CO1,CO5	Describe Prashasta Bheshaja.	CC	MK	KH	L&GD,PL	P-VIVA,QZ	F&S	III	
CO1,CO5	Explain Bheshaja Pariksha of Charaka samhita vimana sthana.	CC	MK	KH	L&GD,SDL,LS	P-VIVA,QZ,M-CHT	F&S	III	
CO1,CO5	Discuss drug evaluation method in correlation with Pharmacognosy.	CC	MK	KH	L&PPT,DIS	P-VIVA,QZ	F&S	III	

Topic 15 15. Dravyasangrahana and Drug collection methods as per GFCP (Good Field collection practices) (Lecture :1 hours, Non lecture: 0 hours)

CO1,CO2	Discuss Dravyasangrahana and Drug collection methods as per GFCP (Good Field collection practices).	CC	DK	KH	L&PPT,PER	P-VIVA,PUZ,CHK	F&S	III	
CO1,CO2	Discuss Drug collection methods as per GFCP (Good Field collection practices).	CC	DK	KH	L&PPT,DIS,PrBL	P-VIVA,PUZ,CHK	F&S	III	

Topic 16 16. GCP (Good cultivation practices), seed bank, conservation of medicinal plants, knowledge about RET (Rear, Endangered & Threatened) medicinal plants. (Lecture :1 hours, Non lecture: 0 hours)

CO2	Discuss good cultivation practices, seed bank, conservation of medicinal plants, knowledge about RET (Rear, Endangered & Threatened) medicinal plants.	CC	DK	KH	L&PPT,L_VC,FC	P-VIVA,M-POS	F&S	III	

Topic 17 17. Abhava Pratinidhi Dravya (substitutes) (Lecture :1 hours, Non lecture: 1 hours)									
CO1,CO7	Discuss the concept of Abhava pratinidhi dravya (substitutes) as per Bhavaprakasha.	CC	MK	KH	L&G D,BS, EDU	P-VIVA,QZ	F&S	III	

Topic 18 18. Classifications and techniques of aqueous and alcoholic extracts (Lecture :0 hours, Non lecture: 2 hours)									
CO2,CO6	Appraise the techniques of aqueous and alcoholic extracts of medicinal plants.	CC	DK	KH	L_VC ,D	P-VIVA,DOPS	F&S	III	

Topic 19 19. Adverse drug reaction and Pharmacovigilance with recent updates (Lecture :1 hours, Non lecture: 2 hours)									
CO2,CO8	Explain adverse drug reaction and pharmacovigilance in ayurveda with recent updates.	CC	MK	KH	L&PP T,L& GD,L S	P-VIVA,PRN, QZ ,M-CHT	F&S	III	V-RS

Topic 20 20. NMPB (National Medicinal Plant Board), CCRAS (Central Council of Research in Ayurveda Sciences), API (Ayurvedic Pharmacopeia of India), GCTM (Global Centre for Traditional Medicine), PCIMH (Pharmacopeia Commission of Indian Medicine and Homeopathy) (Lecture :1 hours, Non lecture: 0 hours)									
CO2	State NMPB (National Medicinal Plant Board), CCRAS (Central Council of Research in Ayurveda Sciences), API (Ayurvedic Pharmacopeia of India), GCTM (Global Centre for Traditional Medicine) and PCIMH (Pharmacopeia Commission of Indian Medicine and Homeopathy).	CK	NK	K	SDL	P-VIVA,QZ ,INT	F&S	III	

Topic 21 21. Vrikshayurveda and Ethno-medicine (Lecture :1 hours, Non lecture: 1 hours)									
CO2	Explain concept of Vrikshayurveda and Ethno medicine.	CC	NK	KH	L&G D,ML ,PER	P-VIVA,CR-RED	F&S	III	

Topic 22 22. Network pharmacology and Bioinformatics (Lecture :1 hours, Non lecture: 1 hours)									

CO2	Describe Network Pharmacology and Bioinformatics.	CC	NK	KH	L&G D,SD L,LS	P-VIVA,CR-RED	F&S	III	

Paper 2 Applied Dravyaguna									
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 1. Bheshajavacharaniya (Criteria's to be considered for selection of drugs in vyadhis) (Lecture :1 hours, Non lecture: 6 hours)									
CO5	Interpret the selection of appropriate drugs in different vyadhis as per criteria's mentioned in Bheshajavacharaniya (as per As. Sa. Su 23)	CAP	MK	KH	L&PP T,CB L,PrB L,SD L	T- EW,P-VIVA,QZ	F&S	II	H-RN ,H-SW
Topic 2 2.1 Dravya (Drug) Nama-Guna-Karma Jnana (Lecture :45 hours, Non lecture: 10 hours)									
CO3	Specify useful parts with its Rasapanchaka of following drugs.	CK	MK	K	L&G D,CB L,FC	T-OBT,P-VIVA	F&S	II	
CO4	Describe karma,agryakarma and dosha karma of following drugs.	CC	MK	KH	L&PP	T-EMI,T-OBT	F&S	II	

					T,DIS ,ML	,P-VIVA,QZ			
CO5	Explain Amayikaprayoga used in Vyadhi (Disease) pertaining to various Srotas and Vyadhiavastha (Stage).	CC	MK	KH	L&G D,BS, CBL	T-EMI,T-OBT,P-VIVA	F&S	II	
CO5	Indicate the Kalpana (dosage form), Matra (Dose), Anupana (Vehicle), Marga(Route), Sevana kala (Time of administration), Kalavadhi (Duration) and Pathya-pathya) of following drugs.	CAP	MK	KH	L&PP T,DIS ,GBL	T-EMI,T-OBT ,P-VIVA,PRN	F&S	II	V-RS, H-SW
CO2	Enlist active phyto-constituents & important formulations Discuss research updates of following drugs.	CK	MK	K	L&PP T,ML	T-OBT,P-VIV A,CR-RED	F&S	II	
CO8	Enlist botanical name & family. Explain main synonyms as per Bruhatryees and Bhavaprakasha.Vernacular name (Hindi,English and local name) of following drugs.	CK	MK	KH	L&PP T,DIS	T-OBT,P-VIVA,QZ ,O-QZ	F&S	II	
CO8	Demonstrate external morphology-habit, root, leaf, stem, flower, inflorescence, fruit, seed and officinal useful parts of following drugs.	CC	MK	KH	L_VC ,DIS, BS	T-OBT,P-VIVA,O-QZ	F&S	II	
CO7	Describe varieties, grahyagrahyatwa Adulterants, substitute and toxic effects of following drugs wherever applicable	CC	MK	KH	L&G D	T- EW,T-OBT ,P-VIVA,QZ	F&S	II	H-AT

Topic 3 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana (Lecture :29 hours, Non lecture: 20 hours)

CO3	Specify useful parts with its Rasapanchaka of following drugs	CK	MK	K	L&PP T,DIS	T-EMI,T-OBT ,P-VIVA,QZ	F&S	III	
CO4	Describe karma, agryakarma and dosha karma of following drugs.	CC	MK	KH	L&PP T,DIS ,BS	T-OBT,P-VIVA,QZ	F&S	III	
CO5	Explain Amayikaprayoga used in Vyadhi (Disease) pertaining to	CC	MK	KH	L&PP	T-OBT,P-	F&S	III	

	various Srotas and vyadhiavastha (Stage).				T,DIS ,CBL	VIVA,QZ			
CO5	Indicate the Kalpana(dosage form), Matra (Dose), Anupana (Vehicle), Marga (Route), Sevana kala (Time of administration), Kalavadhi (Duration) and Pathya-pathya) of following drugs.	CAP	MK	KH	L&PP T,DIS ,ML	T-EMI,P-VIVA	F&S	III	V-RS, H-SW
CO2	Enlist active phyto-constituents & important formulations. Discuss research updates of following drugs.	CK	MK	K	L&G D,BS	T-EMI,T-OBT ,P-VIVA,QZ	F&S	III	
CO8	Enlist botanical name & family. Explain main Synonyms as per Bruhatryees and Bhavaprakasha. Vernacular name (Hindi, English and local name) of following drugs.	CK	MK	K	L&G D,FC, ML	T-OBT,P-VIVA,QZ	F&S	III	
CO8	Demonstrate external morphology-habit, root, leaf, stem, flower, inflorescence, fruit, seed and officinal useful parts of following drugs.	CC	MK	KH	L_VC ,ML	T-OBT,P-VIVA,QZ	F&S	III	
CO7	Describe varieties, grhyahrahyatwa, adulterants, substitute and toxic effects of following drugs wherever applicable.	CC	MK	KH	L&PP T,DIS ,EDU	T-EMI,T-OBT ,P-VIVA,PUZ	F&S	III	H-AT

	PRACTICALS (Marks-100)		
S.No	**List of Topics**	**Term**	**Hours**
1	1. Assessment and Understanding the relation between Parthivatwa & subjective/ objective parametric tests	1	10
2	2. Assessment of objective parametric measures of Guna	1	12
3	3. Assessment of Rasa	1	6
4	4.Comparative organoleptic and macroscopic examination	1	23
5	5. Microscopic Identification of genuine and adulterated drug	1	4
6	6. Demonstration of skills to identify the medicinal plants in the college garden.	1	10
7	7. Out campus visit (Cultivated gardens, Tissue culture lab, Herbaria, Pharmacognosy lab, Quality control lab and Forest plant demonstration)	1	10
8	8. Dravya prayoga	1	12
9	9. Physico-chemical study	2	8
10	10. Phytochemical	2	4
11	11. Thin Layer Chromatography (TLC) technique	2	2
12	12. Demonstration of skills to identify the medicinal plants in the college garden	2	10
13	13. Out campus visit (cultivated gardens & In-situ plant demonstration)	2	10
14	14. Ekala dravya prayoga	2	10
15	15. Different Cultivation technique including methods mentioned in Vrikshayurveda	2	6
16	16. Exercise on Network pharmacology	3	6
17	17. Preparations of digital herbarium	3	2
18	18. Demonstration of skills to identify the medicinal plants in the college garden	3	10
19	19. Out campus visit (cultivated gardens & In-situ plant demonstration)	3	10
20	20. Ekala dravya prayoga	3	10

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 1. Assessment and Understanding the relation between Parthivatwa & subjective/ objective parametric tests									
CO1,CO6	Observe the objective parametric measures to understand the relation between Parthivatwa by Density (bulk) of Asthishrnkhala, Sariva,Vidari, Maricha, Shatavari, Jambu, Godhuma & Ushira.	PSY-GUD	MK	KH	PT	P-VIVA	F&S	I	
CO1,CO6	Observe the objective parametric measures to understand the relation between Jaliyatwa by Viscosity, Moisture content of Kumari, Vidari, Sariva, Shunthi, Ikshu, Usheera, Kamala & Apamarga.	PSY-GUD	MK	KH	PT	P-VIVA	F&S	I	
CO1,CO6	Observe the objective parametric measures to understand the relation between Aagneyatwa by Moisture content of Shunthi, Shatavari, Maricha, Dhataki, Chitraka, Gokshura, Hingu & Chandana.	PSY-GUD	MK	KH	PT	P-VIVA	F&S	I	
CO1,CO6	Observe the objective parametric measures to understand the relation between Vayaviyatwa by Fat content & Bulk density of Usheera, Ashwagandha, Nimba, Vidari, Khadira, Tila, Jambu & Kapikacchu.	PSY-GUD	MK	KH	PT,D_L	P-VIVA	F&S	I	

CO1,CO6	Observe the objective parametric measures to understand the relation between Aakashiyatwa by Bulk density of Usheera, Kumari, Apamarga, Jeeraka & Jatamansi.	PSY-GUD	MK	KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Participate in the methods of specific gravity (Solid) and bulk desity of Asthishrukhala, Sariva, Vidari, Maricha, Shatavari, Jambu, Godhum & Ushir by objective parameters measures to understand the relation between Parthivatwa.	AFT-RES	MK	KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Follow the methods of Viscosity, Moisture content & Specific gravity (Liquid) of Kumari, Vidari, Sariva, Shunthi, Ikshu, Usheera, Kamala & Apamarga by objective parameters measures to understand the relation between Jaliyatwa.	AFT-REC	MK	KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Descibe the methods of pH and Moisture content of Shunthi, Shatavari, Maricha, Dhataki, Chitraka, Gokshura, Hingu & Chandan by objective parameters measures to understand the relation between Agneeyatwa.	AFT-REC	MK	KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Answer to the methods of Fat content , Specific gravity (liquid) & Bulk density of Usheera, Ashwagandha, Nimba, Vidari, Tila, Jambu & Kapikachhu by objective parameters measures to understand the relation between Vayaviyatwa.	AFT-RES	MK	KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Follow the methods of Bulk density of Ushira, Kumari, Apamarga, Jeeraka & Jatamansi by objective parameters measures to understand the relation between Akashiyatwa	AFT-REC	MK	KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Perform the objective parametric measures to understand the relation between Parthivatwa by Specific gravity (solid) of Asthishrnkhala, Sariva,Vidari, Maricha, Shatavari, Jambu, Godhuma & Ushira.	PSY-ADT	MK	SH	PRA	P-EXAM,P-PRF	F&S	I	

CO1,CO6	Perform the objective parametric measures to understand the relation between Jaliyatwa Specific gravity (Liquid) of Kumari, Vidari, Sariva, Shunthi, Ikshu, Usheera, Kamala & Apamarga.	PSY-ADT	MK		SH	PT	P-EXAM,P-PRF	F&S	I	
CO1,CO6	Perform the objective parametric measures to understand the relation between Aagneyatwa by pH of Shunthi, Shatavari, Maricha, Dhataki, Chitraka, Gokshura, Hingu & Chandana.	PSY-ADT	MK		SH	PT	P-EXAM,P-PRF	F&S	I	
CO1,CO6	Perform the objective parametric measures to understand the relation between Vayaviyatwa by Specific gravity (Liquid) of Usheera, Ashwagandha, Nimba, Vidari, Khadira, Tila, Jambu & Kapikacchu.	PSY-ADT	MK		SH	PT	P-EXAM,P-PRF	F&S	I	
Topic 2 2. Assessment of objective parametric measures of Guna										
CO1,CO6	Observe the assessment of objective parametric measures of Shatavari and Bala for its guru guna by Density (bulk).	PSY-GUD	MK		KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Observe the Specific gravity (Liquid and solid) of Shatavari and Bala for its guru guna.	PSY-GUD	MK		KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Observe the assessment of objective parametric measures of Yava and Dhanyaka for its Laghu guna by Density (bulk)	PSY-GUD	MK		KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Demonstrate the Specific gravity (Liquid and solid) Yava and Dhanyaka for its Laghu guna.	PSY-GUD	MK		KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Observe the assessment of objective parametric measures of Snigdha guna drugs by total fat content, moisture content of Tila and Eranda	PSY-GUD	MK		KH	PT,D_L	P-VIVA	F&S	I	
CO1,CO6	Demonstrate Swelling index of Snigdha guna drugs of Tila, and Eranda.	PSY-GUD	MK		KH	D_L,PRA	P-VIVA	F&S	I	
CO1,CO6	Observe the assessment of objective parametric measures of	PSY-	MK		KH	PT,D_	P-VIVA	F&S	I	

	Ruksha guna drugs by total fat content and moisture content of Kulattha & Vidanga	GUD			L			
CO1,CO6	Demonstrate Swelling index of Ruksha guna drugs of Kulattha & Vidanga	PSY-GUD	MK	KH	PT,D_L	P-VIVA	F&S	I
Topic 3 3. Assessment of Rasa								
CO2,CO6	Perform the assessment of Rasa based on classical symptoms for each rasa dravyas.	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF,INT	F&S	I
Topic 4 4.Comparative organoleptic and macroscopic examination								
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of root of Ashwagandha, Chitraka, Manjistha, Musta, Shatavari, Vatsanabha and Yashtimadhu.	PSY-ADT	MK	SH	L_VC,PT,D_L	P-EXAM,P-PRF	F&S	I
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Rhizome/Stolon of Haridra, Katuki, Shunthi and Vacha.	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF	F&S	I
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Stem of Asthishrinkhala and Guduchi.	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF	F&S	I
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Bark of Arjuna, Ashoka, Kutaja, Nimba and Twak.	PSY-ADT	MK	SH	BS,PT,D_L	P-EXAM,P-PRF	F&S	I

CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Heart wood of Beejaka, Chandana and Khadira	PSY-ADT	MK	SH	BS,PT ,D_L	P-EXAM,P-PRF	F&S	I	
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Leaf of Kumari, Meshashringi and Vasa.	PSY-ADT	MK	SH	BS,PT ,D_L	P-EXAM,P-PRF	F&S	I	
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Flower of Dhataki, Kunkum (kesara) and Lavanga.	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF	F&S	I	
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Fruit of Amalaki, Aragavadha, Bhallataka, Bibhitaki, Gokshura, Haritaki, Madanphala, Maricha, Pippali and Vidanga.	PSY-ADT	MK	SH	D_L,P RA	P-EXAM,P-PRF	F&S	I	
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Phalaraja of Kampillaka.	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF	F&S	I	
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Seed of Bakuchi,Ela, Eranda, Jyotishmati	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF	F&S	I	

	and Kapikacchu.								
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Unorganized drugs of Guggulu, Hingu and Mocharasa.	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF	F&S	I	
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Whole plant of Apamarga, Bhrungaraja, Bhumyamalaki, Brahmi, Kalmeghaand and Mandukaparni.	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF	F&S	I	
CO6	Perform the comparative organoleptic characters (Taste, Colour, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks etc) of Galls of Karkatshrungi.	PSY-ADT	MK	SH	PT,D_L	P-EXAM,P-PRF	F&S	I	
Topic 5 5. Microscopic Identification of genuine and adulterated drug									
CO6	Perform the comparative microscopic examination of genuine and adulterated any two samples of Root / stem / leaf /bark / fruits (E.g. like Sariva / Manjishta / Vidanga / Maricha / Ashoka).	PSY-ADT	MK	SH	TUT, PT,D_L	P-EXAM,P-PRF	F&S	I	
Topic 6 6. Demonstration of skills to identify the medicinal plants in the college garden.									
CO8	Demonstrate identification features of college garden medicinal plants for their morphology, taxonomical keys, regional flora with therapeutic uses.	PSY-GUD	MK	KH	L_VC ,ML,S DL,D G,FV	P-VIVA,P-EXAM,P-ID	F&S	I	
CO8	Participate actively in Identification of Medicinal plants.	AFT-RES	MK	SH	DG	P-VIVA,P-EXAM	F&S	I	

Topic 7 7. Out campus visit (Cultivated gardens, Tissue culture lab, Herbaria, Pharmacognosy lab, Quality control lab and Forest plant demonstration)									
CO8	Visit to observe the identification features of medicinal plants which are from cultivated or natural habitat / forest plant.	PSY-GUD	MK	KH	ML,S DL,D G	P-VIVA,P-EXAM	F&S	I	
CO8	Visit to observe the Tissue culture techniques of medicinal plants in local / nearby Tissue culture lab.	PSY-GUD	MK	KH	PT,D_ L	P-VIVA	F&S	I	
CO8	Visit to observe the herbaria of medicinal plants in nearby institute.	PSY-GUD	MK	KH	PT,D	P-VIVA	F&S	I	
CO6	Visit to observe the nearby AYUSH approved Quality control lab for quality control techniques.	PSY-GUD	MK	KH	L_VC ,PT,D _L	P-VIVA	F&S	I	
Topic 8 8. Dravya prayoga									
CO5	Observe the selection of Ekala Dravya (single drug) in various clinical conditions	PSY-GUD	MK	KH	DIS,C BL,S DL,T UT	P-VIVA,QZ	F&S	I	
CO5	Perform the selection of Ekala dravya prayoga in various clinical conditions by masked case sheets.	PSY-ADT	MK	SH	CBL, ECE	P-VIVA,P-EXAM	F&S	I	H-RN
Topic 9 9. Physico-chemical study									
CO6	Perform the foreign matter study of minimum 2 useful parts of medicinal plants.	PSY-ADT	MK	SH	PT,D_ L	P-VIVA	F&S	II	
CO6	Observe the Loss on drying (LoD) study of minimum 2 useful parts of medicinal plants.	PSY-GUD	MK	KH	TUT, PT,D_ L	P-VIVA	F&S	II	

CO6	Observe the Ash value and Extractive value of minimum 2 useful parts of medicinal plants.	PSY-GUD	MK	KH	PT,D_L	P-VIVA	F&S	II	

Topic 10 10. Phytochemical

CO6	Perform Preliminary phytochemical study of minimum 2 medicinal plant extracts.	PSY-ADT	MK	SH	PT,D_L	P-VIVA,P-EXAM,P-PRF	F&S	II	

Topic 11 11. Thin Layer Chromatography (TLC) technique

CO6	Observe the TLC (Thin layer chromatography) technique of one medicinal plant extract.	PSY-GUD	MK	KH	TUT, PT,D_L	P-VIVA,INT	F&S	II	

Topic 12 12. Demonstration of skills to identify the medicinal plants in the college garden

CO8	Demonstrate identification features of college garden medicinal plants for their morphology, taxonomical keys, regional flora with therapeutic uses.	PSY-GUD	MK	KH	L_VC ,DG	P-VIVA,P-EXAM,P-PRF	F&S	II	
CO8	Participate actively in Identification of Medicinal plants.	AFT-RES	MK	SH	DG	P-VIVA	F&S	II	

Topic 13 13. Out campus visit (cultivated gardens & In-situ plant demonstration)

CO8	Visit to observe the identification features of medicinal plants which are from cultivated or natural habitat / forest plant.	PSY-GUD	MK	KH	DG	P-VIVA	F&S	II	

Topic 14 14. Ekala dravya prayoga

CO5	Perform the selection of Ekala dravya prayoga in various clinical conditions by masked case sheets.	PSY-ADT	MK	SH	DIS,C BL,E CE,D _BED	P-VIVA,P-EXAM	F&S	II	H-RN
CO5	Appraise the value of selection of Ekala Dravya Prayog in	AFT-	MK	SH	PBL,	P-VIVA,P-	F&S	II	H-RN

	various clinical conditions by providing masked case sheets.	VAL			CBL, CD	EXAM			

Topic 15 15. Different Cultivation technique including methods mentioned in Vrikshayurveda

CO8	Demonstrate different cultivation technique of medicinal plants in garden.	PSY-GUD	MK	KH	L_VC ,DG	P-VIVA,INT	F&S	II	
CO8	Demonstrate different cultivation methods mentioned in Vrikshayurveda in garden.	PSY-GUD	MK	KH	DG	P-VIVA	F&S	II	

Topic 16 16. Exercise on Network pharmacology

CO2	Conduct the Identification (Data mining) active constituents by Pubmed, IMPPATor PubChem in digital library.	PSY-SET	MK	KH	DIS,D	P-VIVA,PA	F&S	III	
CO2	Conduct Target identification by Binding DB.	PSY-SET	MK	KH	D	P-VIVA	F&S	III	
CO2	Conduct Identification of disease gene by DisGeNET.	PSY-SET	MK	KH	TUT, D	P-VIVA	F&S	III	
CO2	Conduct GO (Gene ontology) enhancement analysis by KEGG Pathway, R ratio.	PSY-SET	MK	KH	D	P-VIVA	F&S	III	
CO2	Conduct Network construction by STRING, PPI network, sytoscope.	PSY-SET	MK	KH	D	P-VIVA	F&S	III	

Topic 17 17. Preparations of digital herbarium

CO8	Prepare digital herbarium of minimum 10 medicinal plants during field visit with all parts of the plant with geo-tag photos.	PSY-ADT	MK	SH	L_VC ,W,T UT,D	P-SUR,RK	F&S	III	

Topic 18 18. Demonstration of skills to identify the medicinal plants in the college garden

CO8	Demonstrate identification features of college garden medicinal	PSY-	MK	KH	L_VC	P-VIVA,P-	F&S	III	

	plants for their morphology, taxonomical keys, regional flora with therapeutic uses.	GUD			,DG	EXAM		
CO8	Participate actively in Identification of Medicinal plants.	AFT-RES	MK	SH	DG	P-VIVA,P-EXAM	F&S	III	

Topic 19 19. Out campus visit (cultivated gardens & In-situ plant demonstration)

CO8	Visit to observe the identification features of medicinal plants which are from cultivated or natural habitat / forest plant.	PSY-GUD	MK	KH	DG	P-VIVA	F&S	III	

Topic 20 20. Ekala dravya prayoga

CO5	Perform the selection of Ekala dravya prayoga in various clinical conditions by masked case sheets.	PSY-ADT	MK	SH	CBL, ECE, D_BED,PRA	P-VIVA,P-EXAM,RK	F&S	III	H-RN
CO5	Appraise the value of selection of Ekala Dravya Prayoga in various clinical conditions by providing masked case sheets.	AFT-VAL	MK	SH	PBL, CBL, CD	P-VIVA,P-EXAM	F&S	III	H-RN

Table 4a: List of Practical

S.No	Name of practical	Term	Activity	Practical hrs
1	1. Assessment and Understanding the relation between Parthivatwa & subjective/ objective parametric tests	1	**1.1 Assessment and Understanding the relation between Parthivatwa & subjective/ objective parametric tests** - Density (bulk) - Specific gravity (solid) **Drugs to study** for e.g.- Asthishrnkhala, Sariva, Vidari, Maricha, Shatavari, Jambu, Godhuma & Ushira **1.2 Assessment and Understanding the relation between Jaliyatwa & subjective/ objective parametric tests** - Viscosity - Specific gravity - Moisture content **Drugs to study** for e.g.- Kumari, Vidari, Sariva, Shunthi, Ikshu, Usheera, Kamala & Apamarga **1.3 Assessment and Understanding the relation between Aagneyatwa & subjective/ objective parametric tests** - pH - Moisture content **Drugs to study** for e.g.: Shunthi, Shatavari, Maricha, Dhataki, Chitraka, Gokhura, Hingu & Chandana **1.4 Assessment and Understanding the relation between Vayaviytwa & subjective/ objective parametric tests** - Fat content - Specific gravity - Density (bulk) **Drugs to study** for e.g. : Usheera, Ashwagandha, Nimba, Vidari, Khadira, Tila, Jambu & Kapikacchu **1.5 Assessment and**	10

			Understanding the relation between Aakashiyatwa & subjective/ objective parametric tests • Density (Bulk) • **Drugs to study** for e.g.: Usheera, Kumari, Apamarga, Jeeraka & Jatamansi	

2	2. Assessment of objective parametric measures of Guna	1	• **2.1 Assessment of objective parametric measures Guru & Laghu Guna**
			• Density (bulk)
			• Specific gravity (Liquid and solid)
			• Drugs to study for e.g. :
			  Guru: Shatavari, Bala ; **Laghu:** Yava, Dhanyaka
			• **2.2 Assessment of objective parametric measures of Snigdha and Ruksha guna drugs**
			• Total fat content
			• Moisture content
			• Swelling index
			• **Drugs to study** for e.g. **:**
			  Snigdha: Tila, Eranda ;
			  Ruksha: Kullatha, Vidanga
				12

3	3. Assessment of Rasa	1	**Assessment of Rasa based on classical symptoms for each rasa dravyas.** One Example For each rasa	6
4	4.Comparative organoleptic and macroscopic examination	1	• **Comparative organoleptic (Taste, Color, Smell, Sound, Touch) and macroscopic examination (Size, Shape, Fracture, External markings like lenticels, ridges, nodes, furrows, cracks, etc)of the following group of drugs.** • **a. Root:** Aswagandha, Chitraka,	23

			Manjistha, Musta, Shatavari, Vatsanabha, Yashtimadhu. • **b. Rhizome/Stolon:** Haridra, Katuki, Shunthi, Vacha. • **c. Stem:** Asthishrinkhala, Guduchi. • **d. Bark:** Arjuna, Ashoka, Kutaja, Nimba, Twak. • **e. Heart wood:** Beejaka, Chandana, Khadira. • **f. Leaf:** Kumari, Meshashringi, Vasa. • **g. Flower:** Dhataki, Kunkum (kesara), Lavanga. • **h. Fruit:** Amalaki, Aragavadha, Bhallataka, Bibhitaki, Gokshura, Haritaki, Madanphala, Maricha, Pippali, Vidanga. • **i. Phalaraja:** Kampillaka • **j. Seed:** Bakuchi, Ela, Eranda, Jyotishmati, Kapikacchu • **k. Unorganized drugs:** Guggulu, Hingu, Mocharasa • **l. Whole plant:** Apamarga, Bhrungaraja, Bhumyamalaki, Brahmi, Kalmegha, Mandukaparni. • **m. Galls:** Karkatshrungi	
5	5. Microscopic Identification of genuine and adulterated drug	1	• **Microscopic identification of genuine and adulterated drug, minimum 2 samples from Root/stem/leaf /bark/fruits.** • (E.g. Sariva/Manjishta/Vidanga/Maricha/Ashoka)	4
6	6. Demonstration of skills to identify the medicinal plants in the college garden.	1		10
7	7. Out campus visit (Cultivated gardens, Tissue culture lab, Herbaria, Pharmacognosy	1	• **General instructions regarding combined educational visit**	10

	lab, Quality control lab and Forest plant demonstration)		• Combined educational visit can be planned wherever feasible as, for **Dravyaguna**- Cultivated gardens, Tissue culture lab, Herbaria, Pharmacognosy lab, Forest plant demonstration ; f**or Agadatantra**- forensic lab, snake park, pollution control board and snake venum unit; f**or Swasthvrutta** -Yoga and naturopathy center , Milk dairy plant, Water Purification plant, Sewage treatment plant, Leprosy rehabilitation Centre & f**or Rasashastra-** GMP certified Lab , Drug Analysis Lab • **SOP for Out campus Field Visits** • **Theme-Based Visits**: Plan visits based on specific educational themes (Deshemani Ganas, Family wise), selecting locations relevant to the theme and collaborating with local experts. • **Dress Code**: Participants must wear jean paints and T shirts, closed-toe shoes, a hat or cap for sun protection, and weather-appropriate gear such as jackets or raincoats. • **Essential Materials**: Each participant should carry a water bottle, a stick (optional), materials for sample storage (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, collecting medical information, and emphasizing expected behaviors' during the trip. • **Itinerary**: Develop a detailed itinerary with activities and a timeline, considering the chosen theme and objectives of the visit. • **Public Address System (PA System)**: If necessary, provide a portable PA system with a	

			microphone, amplifier, and power source for effective communication with larger groups.	
			• **Test the PA System**: Prior to the visit, ensure the PA system is in working order and audible, conducting necessary tests to guarantee functionality.	
			• **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**: Organize post-visit discussions and assignments to reinforce learning, encourage knowledge sharing, and facilitate deeper exploration of the theme.	
			• **Review and Revise**: Regularly update and adapt this SOP to comply with safety standards, educational objectives, and local regulations.	
8	8. Dravya prayoga	1	• **8.1 (Part I) Demonstration of selecting appropriate Ekala dravya as per clinical conditions.** • **8.2 (Part II) Selection of Ekala dravya prayoga in various clinical conditions by providing masked case sheets per srotasa** (5 cases in each term)	12
9	9. Physico-chemical study	2	• **Physicochemical study of medicinal plant. (minimum 2 drugs)** • **a.** Foreign matter • b. Loss on drying • c. Ash value • d. Extracts	8

			• **Note: The same plant should be used for all the tests**	
10	10. Phytochemical	2	• **Preliminary phytochemical study of medicinal plant. (minimum 2 drugs)**	4
11	11. Thin Layer Chromatography (TLC) technique	2	• **TLC technique of medicinal plant (any one)**	2
12	12. Demonstration of skills to identify the medicinal plants in the college garden	2		10
13	13. Out campus visit (cultivated gardens & In-situ plant demonstration)	2		10
14	14. Ekala dravya prayoga	2	• **Selection of Ekala dravya prayoga in various clinical conditions by providing masked case sheets.** (5 cases in each term)	10
15	15. Different Cultivation technique including methods mentioned in Vrikshayurveda	2		6
16	16. Exercise on Network pharmacology	3	• **Exercise on Network Pharmacology** • **1st activity:** Identification (Data mining) active constituents by Pubmed, IMPPATor PubChem. • **2nd activity:** Target identification by BindingDB.	6

			3rd activity: Identification of disease gene by DisGeNET. **4th activity:** GO enhancement analysis by KEGG Pathway, R ratio. **5th step:** Network construction by STRING, PPI network, sytoscope.		
17	17. Preparations of digital herbarium	3	**Preparations of digital herbarium of minimum 10 drugs with all parts of the plant (with geo-tag photos) by compulsory field visit**		2
18	18. Demonstration of skills to identify the medicinal plants in the college garden	3			10
19	19. Out campus visit (cultivated gardens & In-situ plant demonstration)	3			10
20	20. Ekala dravya prayoga	3	**Selection of Ekala dravya prayoga in various clinical conditions by providing masked case sheets.**(5 cases in each term)		10
				Total Hr	**175**

Activity

CO	Topic name	Activity Details	Hours#
CO1,CO3	Dravyaguna Vigyana.	**Group activity** – Assignments are to be given to the students to prepare 2-3 flash cards on importance of Dravyaguna Vigyana in clinical practice.	1

CO1,CO5,CO8	Dravya	• **Segregation** of dry drugs based on Panchabhoutika characteristics. Various Dravyas are given to the students for segregation of dravyas according to Panchabhoutik constitution • **Classify** live plants based on Panchabhoutika characteristics in garden. (Details mentioned in Rasavaisheshik Sutra 2 chapter 101-111) • **Quiz –** based on classifications of dravyas • **Brain storming** - Activity should be assigned to the students to search in samhitas related to classification of dravyas as Prayogabheda, Doshaghnabheda and Karmbheda. Prepare the list of specific assigned classification for group of students.	4
CO1,CO2,CO3	Guna Panchabhoutikatva, characteristics and classification.	• **Matching** of Gurvadi guna with its karma • **Animated Power point** Presentation on Guna. • **Brain storming** - To search in Chikitsasthana of samhitas regarding clinical application of Gurvadi guna and Paradi guna	2
CO1,CO2,CO3	Rasa	• **Game based activity** by closing the eyes they should ask to identify the taste • **Activity based learning** enlisting the dravyas of specific taste • **Matching activity** -Matching of specific Rasas with their Guna & Karma • **Making of Flash cards-** Cards with information regarding different concepts of Rasas	4

CO1,CO2,CO3	Vipak	• **Flash cards -** Preparing flash cards containing pictures of dravya to identify dravya and its vipaka • **Preparing charts** of 20 dravyas with ayathartha vipaka and yatharth vipaka	1
CO1,CO2,CO3	Virya	• **Talk and chalk activity** by students on Dwividha virya and ashtavidha virya. • **Making charts** of dravyas from Bhavaprakash nighantu regarding Dwividha virya- 25 Sheeta Virya dravyas & 25 Ushna Virya Dravyas.	2
CO1,CO2,CO3	Prabhav	• **Puzzle** – Segregating the dravyas based on Samanpratyayarabdha, Vichtrapratyayarabdha and Prabhava.	1
CO1	Interrelation of Rasa-Guna-Virya-Vipaka-Prabhava with respect to their strength - Pharmacodynamics	• **Making flow charts** regarding the rules explained in relation with concepts of dravyaguna • **Group Discussion** - Interrelation of Rasa-Guna-Virya-Vipaka-Prabhava with respect to their strength - Pharmacodynamics	2
CO1,CO2,CO3,CO4,CO5	karma	• **Case base learning**-Taking different clinical conditions & selecting appropriate karma • **Think, Pair and share based activity**-Sepecific problem has to be given,	5

		student should be allowed to think and discuss about appropriate karmas • **Gamification-**Pairing Karma with the drugs. • **Role play for identification of specific karma-** Asking one student to enact & others to find out Karma • **Presentation-** On concept of Karma, types of karma & Individual Karma. • **Enlisting specific karma-**In relation to dravyas from Bruhatrayee & Sharangdhara samhita	
CO1,CO8	Karmas of Dashemani	• **Cramming** –Memorizing the dravyas from specific ganas • **Fish bowl activity** written chits of drugs picked by students and should say the name of the Gana • **Shloka recitation-** Shlokas of Dashemani Gana (Ch. Su. 4) • **Symposia-** Short discussion on various clinical applications of Dashemani Gana	3
CO4,CO9	Principles of General Pharmacology	• **Video:** Showing relevant videos regarding principles of pharmacology and mode of action • **Mobile based learning –**Searching about pharmacology in enlisted websites	1
CO1,CO3	Mishrak Gana	• **GBL-**Identification of mishrak gana by using clues of utility of specific mishrak gana from samhita and chikitsa grantha • **Matching** of dravyas with specific mishraka Gana • **Role play** –enacting individual and combined actions of composition for e.g. Triphala - Individulaly they should enact	2

		as Haritaki, Bibhitaki and Aamalaki explaining their karmas, then they should come together depicting Triphala. • **Self-directed learning-** Mobile based learning on Mishraka Gana	
CO1	Nomenclature of dravya as per Nighantu, Vedic taxonomy and botany	• **Bulletin boards :** Highlighting significant points of nomenclature • **Demo in garden :** Demonstration of the dravyas on the basis of various criteria's of nomenclature • **Symposium** by making groups of specific criteria for nomenclature and asked to present synonyms based on that particular criteria allotted to the group e.g. Upama , Rudhi, Prabhav, Deshokti, Swabhavatha, Lanchana & Guna	2
CO1,CO5	Prashasta Bheshaja, BheshajaPariksha and drug evaluation method with correlation as per Pharmacognosy	• **Read aloud :**Student come on the Dias and read with loud voice • **Self -directed learning** - Charak Samhita Vimansthana Chapter 8	2
CO1,CO7	Abhavapratinidhidravya (substitutes)	• **Self-directed learning**: Self study on Abhavapratinidhidravya (substitutes) from Bhavaprakasha	1
CO2,CO6	Classifications and techniques of aqueous and alcoholic extracts	• **Demo in lab** • **Video**	2
CO2	Adverse drug reaction and Pharmacovigilance with recent updates	• **PBL**: Story telling about reported cases	2

CO8	Vrikshayurveda and ethnomedicine	• **Videos**- Showing videos on cultivation practices and Ethnomedicine	1
		• **Survey :** visit to pharmacovigilance cell at institution • **Guest lecture :** Activities of pharmacovigilance cell	

CO2	Network Pharmacology & Bioinformatics	• **Video** • **Presentation**	1

CO5	**Bheshajavacharaniya**	• **Making charts** on Various Rasa dravya indicated in specific vyadhis for eg. • **Tikta rasa** in Jvara & Kushtha, • **Katu rasa** in Amavata, • **Kashaya rasa** in Pakwatisara, and Raktastambhana, • **Madhur rasa** in Dhatu kshya janya vyadhi , • **Amla & Lavana rasa** in Udavarta, Udara, Gulma,also used as Agnideepana, Mudhavatanulomana, Pachana	6

CO2,CO3,CO4,CO5,CO7,CO8	**2.Dravya (Drug) Nama-Guna-Karma Jnana**	• **Game base activity-** Activity based learning as the chits are prepared of different karmas , those are circulated among the students, once the circulation stops then the student with the chit will be asked to read the karma mentioned in the chit and to explain with examples. • **CBL** (Case based learning) **and PBL** (Problem based learning) activities taken for understanding of Karma in specific clinical scenario	08

		• **Segregation of dravyas** mentioned in syllabus according to Dashemani Gana • **Searching of** Mishrak gana from samhita and chikitsa granths for its utility • **Collecting information** about Grahya and Agahya dravyas mentioned in the syllabus with their characterestics	
CO2,CO3,CO4,CO5,CO7,CO8	**3.Dravya (Drug) Nama-Guna-Karma Jnana**	• **Matching** Rasapanchak, Rogaghnata, Agryakarma of dravya • **Making of charts** regarding Aamayika Prayogas, Agrya Karma & Specific Kalpana • **Case based activity**- one particular disease & suitable plants in order • **Critical reading** with the help of different indexed research articles • **Quiz**	17
CO2,CO3,CO4,CO5,CO7,CO8	**3.Dravya (Drug) Nama-Guna-Karma Jnana**	• Moc practical - • 1) 15 dry & 15 wet **sample dravya spotting test** • **Test** should include at least one each from Leaf, Stem, Root, Rhizome,Gall, Flower, Fruit , Seed, Bark & Resin. • Each spot should be solved in 1 minute so 30 minutes activity should be conducted. • 2) **Skill based assessment -**There shall be three components in skill assessment • A. Identify and separate Grahya & Agrahya of given sample • B. Identifying and grouping of drugs of given Mishraka Gana • C. Understand the clinical scenario and identify five suitable single drug • **Instructions:** • Spotting stations are to be numbered as per the batch. Each spotting station contain: A. Mixture of Grahya & Agrahya B. Name of Misraka Gana and	05

<table>
<tr><td></td><td></td><td>C. Clinical Scenario. Students are allotted with the spotting station by lottery method.

- **Arrangement of Spotting Stations:**
- A. Identify and separate Grahya & Agrahya of Given Sample: Sufficient quantity (approximately 20 gm of Vidanga & Maricha) of mixture of Grahya and Agrahya dravya to be provided. There shall be two empty bowels each one labelled as 'Grahya' and 'Agrahya'. Students are asked to separate the given sample into Grahya and Agrahya. There shall be different drugs for each station.
- B. Identifying and grouping of drugs of given Misraka Gana: Each station shall contain one label containing name of the Misraka Gana with question 'Recollect the drugs belonging to the given Misraka Gana, identify those drugs, collect and make a group. There shall be empty bowl of sufficient size as per the given Gana for collection of drugs.
- C. Understand the clinical scenario and identify five suitable 5 single drugs: Provide the clinical scenario in not less than 100 words and not more than 200 words with or without investigation reports shall be provided at each spotting station (preferably separate cases for each station). Students are asked to go through the scenario and understand the clinical conditions , select 1 single drug, identify, collect and place it in the bowl given for the same. Select five suitable drugs and write as per preference base.</td><td></td></tr>
</table>

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	13

2	Lecture with Power point presentation	100
3	Lecture & Group Discussion	35
4	Lecture with Video clips	19
5	Discussions	42
6	Brainstorming	7
7	PBL	14
8	CBL	7
9	Project-Based Learning	3
10	TBL	3
11	Team project work	5
12	Flipped classroom	22
13	Blended Learning	13
14	Edutainment	4
15	Mobile learning	7
16	Role plays	3
17	Self-directed learning	14
18	Game-Based Learning	6
19	Library Session	18
20	Peer learning	16
21	Recitation	1
22	Tutorial	2
23	Presentations	20
24	Demonstration	1

These are overall teaching learning methods listed in Table 3 and 4. Teachers can select the best possible method amongst the given methods as per objective, available time etc.

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

6 A-Number of Papers and Marks Distribution

Subject Code	Papers	Theory	Practical/Clinical Assessment					Grand Total
			Practical	Viva	Elective	IA	Sub Total	

AyUG-DG	2	200	100	70	-	30	200	400

6 B - Scheme of Assessment (formative and Summative)

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

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

** University Examination shall be on entire syllabus

6 C - Calculation Method for Internal assessment Marks

TERM	PERIODICAL ASSESSMENT*					TERM TEST**	TERM ASSESSMENT	
	A 1	**B**	**C**	**D**	**E**	**F**	**G**	**H**
	1 (15 Marks)	2 (15 Marks)	3 (15 Marks)	Average (A+B+C/3)	Converted to 30 Marks (D/15*30)	Term Test (Marks converted to 30)	Sub Total _/60 Marks	Term Assessment (…./30)
FIRST							E+F	(E+F)/2
SECOND							E+F	(E+F)/2
THIRD						NIL		E
Final IA	Average of Three Term Assessment Marks as Shown in 'H' Column.							
	Maximum Marks in Parentheses *Select an Evaluation Method which is appropriate for the objectives of Topics from the Table 6 D for Periodic assessment. Conduct 15 marks assessment and enter marks in A, B, and C. ** Conduct Theory (100 Marks)(MCQ(20*1 Marks), SAQ(8*5), LAQ(4*10)) and Practical (100 Marks) Then convert to 30 marks.							

6 D - Evaluation Methods for Periodical Assessment

S. No	Evaluation Methods
1	Activities Indicated in Table 3 - Column G3 as per Indicated I, II or III term in column I3

Evaluation Methods in MSE

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 etc.

II PROFESSIONAL BAMS EXAMINATIONS
AyUG-DG
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

Paper 1 Fundamental Dravyaguna						
Sr. No	A List of Topics	B Term	C Marks	MCQ (1 Mark)	SAQ (5 Marks)	LAQ (10 Marks)
1	**1.Dravyaguna Vigyana**	1	1	Yes	No	No
2	**2.Dravya**	1	6	Yes	Yes	No
3	**3. Guna**	1	11	Yes	No	Yes
4	**4. Rasa**	1	11	Yes	No	Yes
5	**5. Vipaka**	1	6	Yes	Yes	No
6	**6. Virya**	1	6	Yes	Yes	No
7	**7. Prabhava**	1	5	No	Yes	No
8	**8. Interrelation of Rasa-Guna-Virya-Vipaka-Prabhava**	1	1	Yes	No	No
9	**9. Karma**	1	11	Yes	No	Yes
10	**10. Karmas of Dashemani Gana**	1	5	No	Yes	No
11	**11. Principles of General Pharmacology**	3	20	Yes	Yes	Yes
12	**12. Mishraka Gana**	3	6	Yes	Yes	No
13	**13. Nomenclature of dravya as per Nighantu, Vedic taxonomy and Botany**	3	1	Yes	No	No
14	**14. Prashasta Bheshaja, Bheshaja Pariksha and drug evaluation method with correlation as per Pharmacognosy**	3	1	Yes	No	No
15	**15. Dravyasangrahana and Drug collection methods as per GFCP (Good Field collection**	3	1	Yes	No	No

	practices)					
16	**16. GCP (Good cultivation practices), seed bank, conservation of medicinal plants, knowledge about RET (Rear, Endangered & Threatened) medicinal plants.**	3	1	Yes	No	No
17	**17. Abhava Pratinidhi Dravya (substitutes)**	3	1	Yes	No	No
18	**18. Classifications and techniques of aqueous and alcoholic extracts**	3	1	Yes	No	No
19	**19. Adverse drug reaction and Pharmacovigilance with recent updates**	3	1	Yes	No	No
20	**20. NMPB (National Medicinal Plant Board), CCRAS (Central Council of Research in Ayurveda Sciences), API (Ayurvedic Pharmacopeia of India), GCTM (Global Centre for Traditional Medicine), PCIMH (Pharmacopeia Commission of Indian Medicine and Homeopathy)**	3	1	Yes	No	No
21	**21. Vrikshayurveda and Ethno-medicine**	3	1	Yes	No	No
22	**22. Network pharmacology and Bioinformatics**	3	2	Yes	No	No
Total Marks			**100**			

Paper 2 Applied Dravyaguna						
Sr. No	A List of Topics	B Term	C Marks	MCQ (1 Mark)	SAQ (5 Marks)	LAQ (10 Marks)
23	**1. Bheshajavacharaniya (Criteria's to be considered for selection of drugs in vyadhis)**	2	5	Yes	No	No
24	**2.1 Dravya (Drug) Nama-Guna-Karma Jnana**	2	55	Yes	Yes	Yes

25	2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana	3	40	Yes	Yes	Yes
Total Marks			**100**			

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. 1.Dravyaguna Vigyana 2. 2.Dravya 3. 3. Guna 4. 4. Rasa 5. 5. Vipaka 6. 6. Virya 7. 8. Interrelation of Rasa-Guna-Virya-Vipaka-Prabhava 8. 12. Mishraka Gana / 9. Karma 9. 11. Principles of General Pharmacology 10. 12. Mishraka Gana 11. 13. Nomenclature of dravya as per Nighantu, Vedic taxonomy and Botany 12. 14. Prashasta Bheshaja, Bheshaja Pariksha and drug evaluation method with correlation as per Pharmacognosy 13. 15. Dravyasangrahana and Drug collection methods as per GFCP (Good Field collection practices) 14. 16. GCP (Good cultivation practices), seed bank, conservation of medicinal plants, knowledge about RET (Rear, Endangered & Threatened) medicinal plants. 15. 17. Abhava Pratinidhi Dravya (substitutes) 16. 18. Classifications and techniques of aqueous and alcoholic extracts 17. 19. Adverse drug reaction and Pharmacovigilance with recent updates 18. 20. NMPB (National Medicinal Plant Board), CCRAS (Central Council of Research in Ayurveda Sciences), API (Ayurvedic Pharmacopeia of India), GCTM (Global Centre for Traditional Medicine), PCIMH (Pharmacopeia Commission of Indian Medicine and Homeopathy) 19. 21. Vrikshayurveda and Ethno-medicine 20. 22. Network pharmacology and Bioinformatics
Q2	**Short answer Questions** **Eight Questions** **5 Marks Each**	1. 2.Dravya 2. 5. Vipaka 3. 6. Virya 4. 7. Prabhava 5. 10. Karmas of Dashemani Gana

Question No	Type of Question	Question Paper Format
	All compulsory **Must know - 7 SAQ** **Desirable to know - 1 SAQ** **No questions on Nice to know**	**6.** 11. Principles of General Pharmacology **7.** 11. Principles of General Pharmacology **8.** 12. Mishraka Gana
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.** 3. Guna **2.** 4. Rasa **3.** 9. Karma **4.** 9. Karma

Paper No:2

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.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **2.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **3.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **4.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **5.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **6.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **7.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **8.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **9.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **10.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **11.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **12.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana **13.** 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana

		14. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana
		15. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana
		16. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana
		17. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana
		18. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana
		19. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana
		20. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana
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. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana 2. 2.1 Dravya (Drug) Nama-Guna-Karma Jnana 3. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana 4. 2.1 Dravya (Drug) Nama-Guna-Karma Jnana 5. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana 6. 2.1 Dravya (Drug) Nama-Guna-Karma Jnana 7. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana 8. 2.1 Dravya (Drug) Nama-Guna-Karma Jnana
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. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana 2. 2.1 Dravya (Drug) Nama-Guna-Karma Jnana 3. 2.2 Dravya (Drugs) Nama -Guna-Karma-Jnana 4. 2.1 Dravya (Drug) Nama-Guna-Karma Jnana

S.No	Heads	Marks
1	1) **15 dry & 15 wet sample dravya spotting test- 30 minutesTest** should include at least one each from Leaf, Stem, Root, Rhizome,Gall, Flower, Fruit , Seed, Bark & Resin.	30
2	2) **Skill based assessment -**There shall be three components in skill assessment A. Identify and separate Grahya & Agrahya of given sample- 10 minutes B. Identifying and grouping of drugs of given Mishraka Gana- 10 minutes C. Understand the clinical scenario and identify five suitable single drug- 10 minutes **Instructions:** • Spotting stations are to be numbered as per the batch. Each spotting station contain: A. Mixture of Grahya & Agrahya B. Name of Misraka Gana and C. Clinical Scenario. Students are allotted with the spotting station by lottery method. **Arrangement of Spotting Stations:** A. Identify and separate Grahya & Agrahya of Given Sample: Sufficient quantity (approximately 20 gm of Vidanga & Maricha) of mixture of Grahya and Agrahya dravya to be provided. There shall be two empty bowels each one labelled as 'Grahya' and 'Agrahya'. Students are asked to separate the given sample into Grahya and Agrahya. There shall be different drugs for each station. B. Identifying and grouping of drugs of given Misraka Gana: Each station shall contain one label containing name of the Misraka Gana with question 'Recollect the drugs belonging to the given Misraka Gana, identify those drugs, collect and make a group. There shall be empty bowl of sufficient size as per the given Gana for collection of drugs. C. Understand the clinical scenario and identify five suitable 5 single drugs: Provide the clinical scenario in not less than 100 words and not more than 200 words with or without investigation reports shall be provided at each spotting station (preferably separate cases for each station). Students are asked to go through the scenario and understand the clinical conditions , select 1 single drug, identify, collect and place it in the bowl given for the same. Select five suitable drugs and write as per preference base.	30
3	3. QC practical (30 minutes)-Performance based components • 3.1. Comparison Macroscopic evaluation of one genuine and one	40

		adulterant sample -10 marks- 15 minutes • 3.2. Panchamahabhoutikatwa assessment by parametric measures by pH of a given sample phant/ Kwatha - (Concern drug Phant / Kwatha should be prepared by college for pH analysis)- 10 marks - 15 minutes • 3.3. Panchabhaoutikatwa assessment by parametric measures by Specific Gravity of a given sample Phat/ Kwatha (Concern drug Phant/ Kwatha should be prepared by college for Specific Gravity)- 20 marks- 30 minutes	
4	4. Viva voce (10 minutes per student)Questions should be asked on following topics - • 1. Fundamentals (Dravya, Guna, Rasa, Vipaka, • Veerya & Prabhav)- 3 questions- 15 marks • 2. Karmas, Dashemani, Mishrak Gana- 3 questions- 15 marks • 3. Pharmacology & Network pharmacology- 3 questions- 15 marks • 4. Clinical application of drugs- 3 questions - 15 marks • 5. Viva on practical records -06 marks • 6. Communication skill (4 marks)	70
5	5. Internal Assessment	30
Total Marks		**200**

References Books/ Resources

S.No	Book	Resources
1	Dravya Guna Shastram	Vaidya G.A. Phadke, Pradnya Mudranalaya, Vaidya Vamanrao Deenanath Shuddhaaayurved Pathyakrama Samitee, Dadabhai Navroji Path, Mumbai
2	Bhavaprakasha	Sri Brahmasankara Mishra and Sri Rupalalaji vaishya, Chaukhamba Sanskrit Series office, Varanasi,
3	Aushadhi Vigyna Shastra (Ayurvedic Pharmacology)	Sri. Vishvanatha Dwidevi ,Shri Baidyanath Ayurved Bhavan Pvt Ltd; Nagpur
4	Ayurvediya Aushadkarma Vigyana	Acharya V.J. Thakar, Gujurat Ayurveda University, Jamnagar
5	Bhava Prakash Nighantu	Vd. Krishna Chandra Chunekar Commentary, Chaukhambha Sanskrit Sansthan, Varanasi
6	Classical Uses of Medicinal Plants	Acharya Priyavrata Sharma ,Chaukhamba Visvabharati, Varanasi
7	Some Controversial Drugs in Indian Medicine	Dr. Bapalal, Vaidya,Chaukhambha Orientalia, Varanasi
8	Dravyaguna Kosha	Acharya Priyavrata Sharma, Chaukhambha Orientalia, Delhi
9	Dravyaguna Vigyana (Vol.1-3)	Dr. Gyanendra Pandey, Chaukhambha Krishnadas Academy, Varanasi
10	Dravyaguna Vigyana (Vol. 1-2)	Acharya Yadavji Tikramji,Baidyanath Ayurved Bhavan Ltd
11	Dravyaguna Vigyana (Vol. 1-5)	Acharya Priyavrata Sharma, Chaukhambha Bharti Academy, Varanasi
12	Nighantu Adarsh (Vol. 1-2)	Vd.G.Bapa Lal, Chaukhambha Bharti Academy, Varanasi
13	Ayurvedic Pharmacology & Therapeutic Uses of Medicinal Plants Dravyagunavignyan	Vaidya V M Gogte, Chaukhambha Publications, New Delhi
14	Dravyagunavijnana(Part I and II)	Prof.D.S.Lucas, Chaukhamba Visvabharati, Varanasi
15	Glossary of Vegetable Drugs in Brihattrayi	Thakur Balwant Singh & Vd. Krishna Chandra Chunekar,Chaukhamba Amarbharti Prakashakan, Varanasi
16	Introduction to Dravyaguna(English)	Acharya Priyavrata Sharma ,Chaukhambha Orientalia, Varanasi
17	A Text Book of Dravyaguna Vijnana (Vol 1,2 & 3)	Dr. Prakash L.Hegde and Dr. Harini A.,Chaukhambha Publications, New Delhi
18	Raspanchaka	Prof. Shiv Charan Dhyani,Chaukhambha Krishnadas Academy, Varanasi

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Abbreviations

Assessment

S.No	Short form	Discription
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	TT-Theory	Theory
53	PP-Practical	Practical
54	VV-Viva	Viva

Domain

S.No	Short form	Discription
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	Discription
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	PRA	Practical