2nd Professional BAMS course (Duration two years)

Distribution of Marks & Teaching Hours

SL. No.	Subjects	Papers	Marks distribution			Number of Lectures	
			Theoretical	Practical, Clinical & Oral	Total Marks	Theoretical	Practical/Clinical/Demonstration
1	**Dravyaguna** (Pharmacology & Pharmacognosy) Paper-II	Paper: II (General/Clinical Pharmacology &Pharmacognosy)	100 (F: 10+W:90)	100 (P: 50+O:50)	200	100	50 (Practical/Filed side Training Classes)
2	**Rasashastra and Bhaishajya Kalpana** (Pharmacy & Pharmaceutics)		100 (F: 10+W:90)	100 (P: 50+O:50)	200	100	50 (Practical/Industrial site Training)
3	**Rognidan & Anujib Vigyan** (Pathology & Microbiology)	Paper: I Rognidan (Pathology) Paper: II Anujib (Microbiology)	200 Each paper :100 (F: 10+W:90)	200 (P: 100+O:100)	400	200	100 (Practical/Clinical Classes)
4	**Swasthavritta** (Community Medicine)		100 (F: 10+W:90)	200 (P: 100+O:100)	300	150	50 (Demonstration & 15 days Filed site Training)
5	**Agad Tantra & Medical Ayen** (Forensic Medicine & Toxicology)		100 (F: 10+W:90)	100 (P:50+O: 50)	200	100	50 (Demonstration Classes)
6	**Kayachikitsa** (Medicine & Allied subjects)	Paper: I **(**Clinical Diagnosis, Charaka's Principles & Practice of Medicine) Paper: II (General Medicine)	200 Each paper :100 (F: 10+W:90)	200 (O:100+C: 50+ P: 50)	400	200	3 (Three) Months Clinical/Hospital Training
Total			**900**	**800**	**1700**		

** **Duration of each Lecture will be Theoretical 1 (one) hour and Practical/Clinical 3 (three) hours**.

Syllabus

of

DRAVYAGUNA

(Pharmacology & Pharmacognosy)

For
The Course of B.A.M.S Medical Students of Bangladesh

Published by
University of Dhaka
Bangladesh

DEPARTMENTAL OBJECTIVES:

At the end of the course in Dravyaguna (Pharmacology & Pharmacognosy) the Students will should be able to:

- Equip themselfs with adequate knowledge of Dravyaguna (Pharmacology & Pharmacognosy) including clinical aspect.
- Understand mode of action of Sapta padartha – (Dravya, Rasa, Guna, Virya, Vipaka,- Prabhava and Karma.) as well as mechanism and drug action.
- Understand details knowledge of medicinal plant with their therapeutical usases including phytochemistry.
- Know synoname, morphology, cultivation, conservation, impurities, purification, identification, effects, and sideeffects of Dravy.
- Perform and enterpret modern pharmacology, WHO essential drug list, nutracicals and herbal medicine, biotechnology etc.
- Demonstrate knowledge and skill to precede higher studies and research in Dravyaguna (Pharmacology & Pharmacognosy) in relation to needs and disease profile of the country.
- Develop sound attitude towards the need for continuing self education.
- Demonstrate knowledge of pharmacological activities of Ayurvedic drugs (both single and compound).

Dravyaguna (Pharmacology & Pharmacognosy)

Paper – II: Dravyaguna (Pharmacology & Pharmacognosy) **Marks – 100: Formative-10, Written-90 (MCQ-20 +SAQ-70)**

<table>
<tr><th>Learning Objectives</th><th>Contents</th><th>Teaching/Learning Strategy</th><th>Teaching Aids</th><th>Hours/ Days</th><th>Assessment</th></tr>
<tr><td colspan="6">Detailed knowledge of following drugs</td></tr>
<tr>
<td>The Students will be able to know Detailed knowledge of following drugs with respect to Synonym of drug, Main Synonyms, Regional Name, Botanical Name, Family, Classification of Dravya (Gana) as described in Charak and Sushrut, External morphology, Useful parts, Important phytoconstituents, Rasa panchaka, Action on Dosha, Dhatu, Mala, Prayogarha vyadhi (therapeutic indications), Amayikaprayoga and Matra (Therapeutic administration and Dose), Clinical Pharmacology , Pharmacodynamics,Pharmacokinatics ,Therapeutical evaluation of a drug Vishishta yoga (names of important formulations), Vishakta Lakshan (adverse effects), Chikitsopachara (remedial measures) and Shodhana (as required)</td>
<td>
<table>
<tr><th>Sanskrit</th><th>Bangla</th><th>Sanskrit</th><th>Bangla</th><th>Sanskrit</th><th>Bangla</th></tr>
<tr><td>Ahiphena</td><td></td><td>Agnimantha</td><td></td><td>Agaru</td><td></td></tr>
<tr><td>Amalaki</td><td></td><td>Apamarga</td><td></td><td>Aragvadha</td><td></td></tr>
<tr><td>Ardraka-sunti</td><td></td><td>Arjuna</td><td></td><td>Arka</td><td></td></tr>
<tr><td>Ashvagandha</td><td></td><td>Ashvagola</td><td></td><td>Asoka</td><td></td></tr>
<tr><td>Ativisha</td><td></td><td>Bakuchi</td><td></td><td>Baladvayam.</td><td></td></tr>
<tr><td>Bharangi</td><td></td><td>Bhallataka</td><td></td><td>Bibhitaka</td><td></td></tr>
<tr><td>Vijayasara</td><td></td><td>Bilva</td><td></td><td>Brahmi</td><td></td></tr>
<tr><td>Briungaraj</td><td></td><td>Bruhati</td><td></td><td>Chandanadvaya,</td><td></td></tr>
<tr><td>Citraka</td><td></td><td>Dadima</td><td></td><td>Danti,</td><td></td></tr>
<tr><td>Daruharidra</td><td></td><td>Dhanyaka</td><td></td><td>Dhataki</td><td></td></tr>
<tr><td>Draksha</td><td></td><td>Durva</td><td></td><td>Ela</td><td></td></tr>
<tr><td>Eranda</td><td></td><td>Gambhari</td><td></td><td>Gokshura</td><td></td></tr>
<tr><td>Guduchi</td><td></td><td>Guggulu</td><td></td><td>Haridra</td><td></td></tr>
<tr><td>Haritaki</td><td></td><td>Hingu</td><td></td><td>Jambu,</td><td></td></tr>
<tr><td>Jatamamsi</td><td></td><td>Jatiphal</td><td></td><td>Jeerakdvaya</td><td></td></tr>
<tr><td>Jyotishmati</td><td></td><td>Kalamegha</td><td></td><td>Kampilla</td><td></td></tr>
<tr><td>Kanchanara</td><td></td><td>Kantakari</td><td></td><td>Kapikacchu</td><td></td></tr>
<tr><td>Karkataksringi</td><td></td><td>Karpura</td><td></td><td>Katuki</td><td></td></tr>
<tr><td>Khadira</td><td></td><td>Kiratatikta</td><td></td><td>Kumari</td><td></td></tr>
<tr><td>Kupilu</td><td></td><td>Kumkum kesara</td><td></td><td>Kushmanda</td><td></td></tr>
<tr><td>Lavang</td><td></td><td>Kutaja</td><td></td><td>Lodhra</td><td></td></tr>
<tr><td>Madanaphala</td><td></td><td>Manjishtha</td><td></td><td>Maricha</td><td></td></tr>
<tr><td>Markandika</td><td></td><td>Musali</td><td></td><td>Musta</td><td></td></tr>
<tr><td>Nagakeshara</td><td></td><td>Nimba</td><td></td><td>Nirgundi</td><td></td></tr>
<tr><td>Palasha</td><td></td><td>Palandu</td><td></td><td>Pashanabheda</td><td></td></tr>
<tr><td>Patala</td><td></td><td>Patola</td><td></td><td>Pippali</td><td></td></tr>
<tr><td>Purnarnava</td><td></td><td>Rasna</td><td></td><td>Rasona</td><td></td></tr>
<tr><td>Saireyaka</td><td></td><td>Sallaki</td><td></td><td>Saptaparna</td><td></td></tr>
<tr><td>Sarpagandha</td><td></td><td>Sariva</td><td></td><td>Shalparni</td><td></td></tr>
<tr><td>Shalmali</td><td></td><td>Shankhapushpi</td><td></td><td>Shatavari</td><td></td></tr>
<tr><td>Shathapushpa</td><td></td><td>Shigru</td><td></td><td>Shirish</td><td></td></tr>
</table>
</td>
<td>-Lecture
-Lecture (Ward)
-Clinical case presentation
-Self reading & Learning</td>
<td>-OHP
-Video tapes,
-TV,
-VCR, Audio player.
-Slide projector
-Charts , Flow charts,
-Models, Specimens
-White board and marker
-Chalk board and chalks
-Computer and multimedia
-Study guide and manuals
Seminar</td>
<td>L- 20 hrs</td>
<td>-Written Eam.
-Presentation
-SEQ
-Oral
-MCQ
-Practical
-OSCE
-Short case
-Long case
-At least 100 patients should be examined and treated for various diseases according to principles of treatment of Acharya Charaka - Minimum ten beds in the IPD of the hospital.</td>
</tr>
</table>

Shyonaka		Thalisa patra		Tila		
Tivrut		Tulasi		Tvak		
Ushira		Vacha		Varuna		
Vasa		Vata		Vatsanabha		
Vidari		Vidanga		Yastimadhu		
Agastya		Akarakarabha		Ajamoda		
Amra		Mragandhiharidra		Ankola		
Aparajita		Ashvattha		Asthishrunkhala		
Avartaki		Babbula		Badara		
Bakula		Bhumyamalki		Bimbi		
Bijapoora		Bola,		Chandrashura		
Changeri,		Chavya		Chakramarda		
Champaka		Chirbilva		Chopachini		
Dattura		Darbha		Dhanvayasa,		
Dronapushpi		Gandhaprasarini		Garjara		
Gojihva,		Gorakshamajja		Gunja		
Hismra		Hrutpatri		Indravaruni		
Ingudi		Irimeda		Isvari		
Japa		Jati		Jayapala		
Jeevanti		Kadali,		Kadamba		
Kaidarya		Kamala		Kankola		
Kakamachi		Karanja		Karira		
Karpasa		Karvira		Karavella		
Kasha		Kasni		Kataka		
Kataphala		Kharjura		Kitmari		
Koshataki		Kokilaksha		Kumuda		
Kusha		Lajjalu		Langali		
Latakaranja		Latakasthurii		Madayantika		
Mahanimba		Mandukaparni		Mashaparni		
Mayaphala		Methika		Meshashrungi		
Mudgaparni		Mulaka		Nagabala		
Nala		Narikala		Nili		
Padmaka		Parushaka		Parasika yavani,		
Parijata		Parisha		Parnabija		
Parnayavani		Parpataka		Patalagarudi		
Patha		Patranga		Pilu		
Plaksha,		Priyala		Prishniparni		
Priyangu,		Puga,		Putiha,		
Putranjivaka,		Pushkarmoola		Rajika/ Sarshapa		

	Rohitaka,		Sala		Saptachakra					
	Sarala,		Sarja		Satapa					
	Shaliparni		Shati		Sharapunkha					
	Shinsapa		Snuhi		Sringataka					
	Surana,		Svarnakshiri		Tagara					
	Tailaparni		Talmuli		Taruni					
	Tavakshira		Tuvaraka		Upakunchika					
	Udumbara,		Vamsha,		Vata					
	Varahikanda		Vruddadaru		Vrukshamla					
Drugs of animal origin										
The Students will be able to know the Introduction, Guna, Karma and uses of following jantava dravya.	1.	Kasturi	2.	Gorochana	3.	Gandhamarjaravirya				
	4.	Mrigasringa	5.	Bhunaga	6.	Mukta				
	7.	Pravala	8.	Shankha	9.	Shukti				
	10.	Shambūka	11.	Varatika	12.	Indragopa				
Annapana varga										
The Students will be able to know the Introduction, knowledge of guna-karma of following groups of Annapana varga.	1.	Jala Varga	2.	Dugdha Varga	3.	Madhu Varga				
	4.	Ikshu Varga	5.	Taila Varga	6.	Madya Varga				
	7.	Mutra Varga	8.	Sūkadhanya Varga	9.	Simbidhanya Varga				
	10.	Phala Varga	11.	Shaka Varga	12.	Mansa Varga				
	13.	Lavana Varga	14.	Kritannavarga(Processed food)						
Cultivation, Conservation of Medicinal plants										
Students will be able to know the Brief knowledge of Cultivation, Conservation of Medicinal plants and information about endangered species.	**Cultivation, Conservation of Medicinal plants**									
Punctional foods, Nutraceuticals and herbal medicine										
Students will be able to know the Introduction, food science and neutrition, food prossessing and food product development, food biotechnology, food- nutrition-health and diseases, nutraceutical dietary suppliments.	**Punctional foods, Nutraceuticals and herbal medicine**									
Autonomic Pharmacology										
Students will be able to: ▪ Understand the organization of autonomic nervous system, physiology of neuro-chemical transmission, co-transmission and their pre and post synaptic modulation ▪ Understand the physiology of cholinergic neurotransmission, classify the cholinoceptors and identify the drugs affecting cholinergic transmission and cholinoceptor	• Introduction • Cholinergic Drugs • Anti-cholinergic Anti-muscarinic • Anti-cholinergic anti-nicotinic • Adrenergic neurotransmission • Adrenergic Drugs: • Selective β2agonists as • α–adrenoceptor antagonist • β adrenoceptor antagonist									

Gastrointestinal Pharmacology					
Students will be able to: ▪ Classify or list the drugs affecting GIT ▪ Identify pharmacological effects of the drugs ▪ Interpret the mechanism of action, kinetics of the drugs and their toxicity ▪ Correlate the gained knowledge to form the basis for rational use of medicines in a given clinical situation	• Drugs used in Peptic ulcer • Drugs to treat diarrhoea • Drugs used in helminthiasis • Laxatives • Drugs for Inflammatory Bowel Diseases (IBS) & Irritable Bowel Syndrome (IBS)				
Respiratory Pharmacology					
Students will be able to: ▪ List drugs which affect the respritory system ▪ Describe their pharmacological effects ▪ Explain mechanism of actions,kinetics and toxicity ▪ Correlate these knowledge to form the basis for rational use of drugs in a given clinical situation	• Drug treatment of bronchial asthma				
Renal & Cardiovascular Pharmacology					
Students will be able to: ▪ Classify or list drugs which affect the Cardiovascular System ▪ Identify their pharmacological effects ▪ Interprete mechanisms of actions, kinetics and toxicity ▪ Correlate these knowledge to form the basis for their rational use in a given clinical situation	• Diuretics • Drugs used in hypertension • Drugs used in congestive cardiac failure • Antianginal drugs				
Haematopoetic Pharmacology					
Students will be able to: ▪ Classify or list drugs which affect the hematopoietic system ▪ Identify their pharmacological effects ▪ Interprete mechanisms of actions, kinetics and toxicity ▪ Correlate these knowledge to form the basis for their rational use in a given clinical situation	• Anticoagulants & Thrombolytics • Antiplatelet drugs • Lipid regulating drugs • Drugs for anaemia				
Endocrine Pharmacology					
Students will be able to: ▪ Understand the physiology of endocrine and metabolic systems ▪ List the pancreatic islet hormones and understand their role in the control of blood glucose; define and classify diabetes; understand the diagnostic criteria and monitoring tests and describe the pharmacology of insulin and oral antidiabetic drugs. ▪ List and describe the physiology of adrenocortical hormones. Identify the synthesis inhibitors & their role in therapy; describe the pharmacology of adrenocorticosteroids to assess their role in therapy as anti -inflammatory and immunosuppressive drugs	• Endocrine Pancreas and control of blood glucose • Reproductive system • The Uterus • The Thyroid				
Central Nervous System					
Students will be able to: • Classify or list of drugs acting on	• Introduction to CNS Drugs • Opioid analgesic				

• Central Nervous System • Explain the mechanisms of action, kinetics and toxicity of these drugs • Describe the uses, administration, adverse effects & precautions of drugs used in diseases of CNS	• Anxiolytics and hypnotics • Antidepressant drugs • Antipsychotic drugs • Local anaesthetic • General anaesthetics • Skeletal muscle relaxation • Anti-emetics • Antiparkinsonian Drugs • Antiepileptics/Anticonvulsants				
Autacoids and drugs used in inflammation					
Student will be able to ▪ Describe:the role of biogenic amines & prostaglandins in health & diseases ▪ Explain their mechanism of actions, pharmacological effects, kinetics and toxicity ▪ Correlate these knowledge to form the basis for rational use of drugs in a given clinical situation.	• Autacoids • Ecosanoids • NSAIDs/ Non-opioid analgesics • Drugs for Migraine				
Chemotherapy					
Students will be able to: • Classify or list each group/ class of antimicrobial drugs • Understand& explain the mechanism of action, kinetics and toxicity of the antimicrobial drugs • Describe the clinical uses, administration, adverse effects of different antimicrobial drugs used in different clinical situations and the precautions that should be taken before their use • Correlate the gained knowledge to form the basis for rational use of medicines in a given clinical situation	• Drug Resistance • Beta-lactam Antibiotics • Protein Synthesis Inhibitors • Sulfonamides & Cotrimoxazole • Quinolones & Fluoroquinolones • Azoles : Metronidazole and other azoles • Drugs used in Tuberculosis • Drugs used in Leprosy& Kala-Aza • Drugs used in Malaria • Drugs used in Fungal Infections • Drugs used in Viral Infections • Cancer Chemotherapy				
Clinical Pharmacology					
Students will be able to: • State the principles of rational prescription • Identify means of irrational prescribing and consequences • Take measures to prevent irrational prescribing • Select essential drugs in common • Diseases from EDL • Select P drug –in some clinical situation • Correlate these knowledge to form the basis for rational use of drugs in a given clinical situation	• Rational Prescribing • Drug Compendia (Information Sources) • Brief knowledge about WHOs "Essential Drug List" • 'P Drug' concept • Drug selection for some special clinical conditions: Pregnancy, different age groups, renal / hepatic failure				
Hospital training, industrial training, clinical research and pharmacokinetics.					

PRACTICAL

1. Detailed knowledge of identification of following drugs: -
    (i) Kanda (stem) - Guduchi
    (ii) Patra (leaves) - Swarnapatri, Vasa, and Kumari
    (iii) Pushpa (flower and Parts of flower)- Lavanga, Nagapuspa,Japa
    (iv) Phala (fruit) - Pippali, Madanaphala, Vidanga
    (v) Beeja (seeds) – Eranda, Kapikacchu, Vidanga
    (vi) Twaka (bark) –Kutaja, Arjuna,
    (vii) Moola (Root)- Punarnava,Aswagandha
    (viii) Niryasa (exudate) - Hingu, Guggulu, Mocharasa
    (ix) Jangama dravya (animal origin) - Madhu.Ghrita
1. Collection of minimum 50 herbarium specimen from field visit.
2. Compilation of a drug not less than 25 pages.
3. Concept based clinical study on single drugs (Minimum 5 from detailed and non-detailed list of drugs) in patients.
4. General Pharmacology:
5. Pharmacokinetics and Pharmacodynamics
6. Autonmic Pharmacology:
7. Review of Cholinergic–Anticholinergic drugs
8. Revives of Adrenergic–Antiadrenergic drug
9. Drugs acting onRenal &CVS
10. Review on Endocrine drug
11. Drugs for Bronchial asthma, PUD, Anemia
12. Drugs ued in Anxiety, sleep disorder
13. Drugs used in depression, epilepsy and parkinsonism
14. Autacoids & NSAIDs
15. Chemotherapy for specific infections: Shigellosis, Enteric fever, ARIs,
16. UTIs, malaria, tuberculosis, fungal infections
17. RUM: Principles of Rational prescribing & means to resist pressure
18. for irrational prescribing, Essential Drug Concept

PRACTICAL MARKS DIVISION

1.	Compilation/Essay	10 Marks
2.	Herbarium	10 Marks
3.	Single drug therapy	10 Marks
4	Pharmacognocy record in Laboratory	10 Marks
5.	Drug identification	80 Marks
6.	Oral/(Viva-Voce)	80 Marks

Reference Books

1.	Abhinav Buti Darpan (Vol.1-2)	-	Vd. Roop Lal Vaishya
2.	Aushadna Vigyna Shastra	-	Acharya Pt. Vishvanatha Dwidevi
3.	Ayurvediya Aushadnkarma vigyana	-	Acharya V.J. Thakur
4.	Bedi Vanaspati Kosha	-	Prof. Ramesh Bedi
5.	Bhaishajyaguna Vigyana	-	Dr. Alakhnarayan Singh
6.	Bhav Prakash Nigantu (English)	-	Shreekanthamurti
7.	Bhav Prakash Nighantu	-	With Vd. Krishna Chandra Chunekar commentary
8.	Bhrinad dravyagunadarsha	-	Mahendra Kumar Shastri
9.	Classical Uses of Medicinal Plants	-	Acharya Priyavrata Sharma
10.	Controversial Medicinal Plants	-	Vd. G. Bapa Lal
11.	Dalhana Ka Dravyaguna Shastra KeKshetra Me Yogadana	-	Vd. Shiv Kumar Vyas
12.	Dravyaguna Kosha	-	Acharya Priyavrata Sharma
13.	Dravyaguna Sutram	-	Acharya Priyavrata Sharma
14.	Dravyaguna Vigyana	-	Dr. Gyanendra Pandey
15.	Dravyaguna Vigyana(Vol. 1-2)	-	Acharya Yadavji Tikram Ji
16.	Dravyaguna Vijyana	-	Dr. V.M. Gogate
17.	Dravyaguna Vigyana (Vol. 1-5)	-	Acharya Priyavrata Sharma
18.	Dravyaguna Shastrum	-	Vaidya G.A. Phadake
19.	Dravyaguna Vijyana	-	Dr. A.P. Deshpande
20.	Dravyagunavijnana basic Principles	-	Prof.D.S.Lucas
21.	Forgotten Healers (Indian Medicinal Plants)	-	Dr. Prakash Pranjape
22.	Glossry of Vegetable Drugs in Bhrittrayis	-	Thakur Balwant Singh & Vd.Krishna Chandra Chunekar
23.	Introduction to Dravyaguna	-	Acharya Priyavrata Sharma
24.	Kriyatamka Aushadi Parichaya	-	Acharya Pt. Vishvanath Dwidevi
25.	Materia Medica	-	Acharya Ghosh
26.	Nighantu Adarsh (Vol. 1-2)	-	Vd. Bapa Lal
27.	Pharmacological basis of Medical Practice	-	Goodman & Gillman
28.	Pharmacology and Pharmacotherapeutics	-	Satoskar Bhandarkar & Ainapure
29.	Prayogatamaka Dravyaguna Vigyana	-	Dr. Maya Ram Uniyal
30.	Priya nighantu	-	Acharya Priyavrata Sharma
33.	Text Book of Pharmaconogy	-	Trees & Valis
34.	Textbook of Dravyaguna	-	Dr.K.Nishteswar
35.	Unani Dravyaguna Vigyana	-	Hakim Daljeet Singh
36.	Useful parts of Charaka, Sushurut, and Vagbhata.	-	
37.	Uttarakand Ki Vanaspatiya	-	Dr. Gyanendra Pandey
38.	Vanoaushadi Darshika	-	Thakur Balwant Singh
39.	Vanoaushadi Nidarshika	-	Dr. Ram Sushil Singh
40.	Vedic Vanaspatiyan	-	Dr. Dinesh Chandra Sharma

Syllabus

of

RASASHASTRA AND BHAISHAJYA KALPANA

(Pharmacy and Pharmaceutics)

For
The Course of B.A.M.S Medical Students of Bangladesh

Published by
University of Dhaka
Bangladesh

Departmental Objectives

To develop trained Ayurvedic graduates who will be able to prepare Ayurvedic medicine & purified heavy metals which are used in many Ayurvedic preparations, that will be helps Ayurvedic physicians to treat distress community. Hence at the end of the course, students will be able to:

1. Purified heavy metals that use in Ayurvedic preparations.
2. They know source of these heavy metals, collection procedures, method of purification, Remove toxicity etc.
3. They know the indications of these heavy metals.
4. They know how to use these heavy metals in Ayurvedic preparations.
5. They know how to treat & prevent toxicity if arise of these heavy metals after use.
6. Perform to identify purified heavy metals.
7. Perform ability to use heavy metals along with herbs.
8. They able to select raw herbs for prepare Ayurvedic herbs.
9. They able to maintain standardization Ayurvedic raw herbs.
10. They able process medicinal ingredients according to Ayurvedic formulation.
11. They able to prepare all types of Ayurvedic preparations like Ashava, Arista, Bati, Churna, Lepa, Taila, Kalpa etc.
12. They able to maintain standard quality of the Ayurvedic preparations.
13. They able to maintain scientific research about Ayurvedic preparations

Learning objectives:

- History and evaluation of pharmacy both Ayurvedic & Allopathic.
- Defferenct system of medicine: Allopathic, Ayurvedic, Unani, Homeopathic, Acupuncture, Traditional and herbal medicine
- Definition of drugs and medicine, drug standards, pharmacists' code of ethics.
- Pharmacy information resources and some common terms with abbriviations used in pharmaceutical sciences.
- Organic and inorganic pharmaseuticals chemistry.
- Pharmaceutical Technology: Powders and granules, formation and manufacturing of tablets, common tableting problems and evaluation of tablets, tablet coating, hard and soft gelatin capsules, formulation compounding of defferent syrup, suspension, emulsions, ointments creams, tablets, capsules etc.
- Punctional foods, Nutraceuticals and herbal medicine: Introduction, food science and neutrition, food prossessing and food product development, food biotechnology, food- nutrition- health and diseases, nutraceutical dietary suppliments.
- Hospital training, industrial training, clinical research and pharmacokinetics.

Contents:

- History and evaluation of pharmacy both Ayurvedic & Allopathic.
- Definition of drugs and medicine, drug standards, pharmacists' code of ethics.
- Pharmacy information resources and some common terms with abbriviations used in pharmaceutical sciences.
- Organic and inorganic pharmaseuticals chemistry

Rsasashastra (Ayurvedic Pharmacy)

Marks – 100: Formative-10, Written-90 (MCQ-20 +SAQ-70)

Learning Objectives	Contents	Teaching/ Learning Strategy	Teaching Aids	Hours/ Days	Assessment
Introduction of Rasa & Rasashastra					
Students will be able to the definition, history and importance of Rasa and Rasashastra.	**Core:** • Definition and etymology of Rasa, • History of Rasashastra, • Importance of Rasaushadhi, • Concept of Rasa-Rasayana, • Concept of Raseshwar Darshana. • Concept of Rasashala and Rasamandap.	-Lecture -Lecture (Ward) -Clinical case presentation -Self reading & Learning	-OHP -Video tapes, -TV, -VCR, Audio player. -Slide projector -Charts , Flow charts, -Models, Specimens -White board and marker -Chalk board and chalks -Computer and multimedia -Study guide and manuals Seminar	L- 20 hrs	-Written Eam. -Presentation -SEQ -Oral -MCQ -Practical -OSCE -Short case -Long case -At least 100 patients should be examined and treated for various diseases according to principles of treatment of Acharya Charaka - Minimum ten beds in the IPD of the hospital.
Description and Application of Technical terminologies					
Students will be able to the brief Description and Application of Technical different terminologies (Paribhasha)	• Avapa • Nirvapa • Dhalana • Bhavana • Jarana • Murchana • Shodhana • Marana				

	• Amrutikarana • Lohitikarana • Mruta Loha • Satwa Patana • Druti • Apunarbhava • Niruttha • Rekhapurna • Varitara				
Dravya Varga					
Students will be able to know the the introduction, contents and uses of following dravya vargs.	• Amlavarga • Panchamrittika • Panchagavya • Panchamrita • Ksharashtaka • Dravakagana • Mitra panchaka • Rakta varga • Lavanapanchaka.				
Yantras and their application					
Students will be able to know the brief description of Yantras and their application	• Ulukhala Yantra • Khalwa Yantra • Kachhapa Yantra • Damaru Yantra • Vidhyadhara Yantra • Urdhwapatan • Addhapatan & Tiryakpatana Yantra • Jaranartha Tulayantra • Dolayantra • Patalayantra • Palika Yantra • Baluka Yantra • Bhudhara Yantra • Sthali Yantra • Swedana Yantra				

Musha (Crucible)					
Students will be able to know the brief description & application of Musha (Crucible)	• Samanya Musha, • Gostani musha, • Vajra, Maha Musha, • Yoga musha, • Vrintaka Musha, • Malla /Pakwa musha. • Different types of crucibles e.g. Silica crucible, platinum crucible. • Mudra and Sandhi Bandhana.				
Chullika					
Students will be able to know the Brief description & applications of Chullika	• Satwapatana Koshthi • Patala Kosthi, • Gara Koshthi, • Angarakoshthi and • Knowledge of various heating appliances viz. Gas stove, Hot plate, heating mantle, Induction Stove, Hot Air Oven.				
Puta					
Students will be able to know the concept, definition and types of Puta.	• Suryaputa • Chandraputa • Gomayaputa • Lawakaputa • Kukkutaputa • Kapotaputa • Varahaputa • Gajaputa • Mahaputa • Kumbhaputa • Valukaputa • Bhudharaputa • Applications of Electric muffle furnace and fuel (diesel) dependent furnace. • Brief introduction to thermocouple and pyrometer.				

Parada					
Students will be able to the detailed knowledge of Parada	• Synonyms, Occurrence, • natural and artificial sources of Parada, Hingulottha parada, • Types of Parada, • Parada Dosha: Naisargika, Yougika, Aupadhika (Kanchuka). • Grahya-Agrahya Parada, • Parada gati • Parada bandha, • Shodhana of Parada. • Parada sanskara and • Brief description of Ashtasamskara. • Concept of Murchhana and Jarana of Parada, • Preparation of Kajjali, • Classification of Rasaushadhi: Khalvi rasa e.g. Tribhuvana Keerti Rasa, Rasa Parpati, Kupipakva Rasa- Rasa sindur, Pottali rasa-Hemagarbha pottali. • Rasa sevana vidhi and pathya and apathya.				
Quality control, standardization and GMP of Rasaoushadhies					
Students will be able to know the brief introduction of quality control, standardization and GMP of Rasaoushadhies	• Quality control, standardization and GMP of Rasaoushadhies.				
Maharasa					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Abhraka (Biotite Mica), • Vaikrantha, • Makshika (Chalco-pyrite), • Vimala (Iron Pyrite), • Shilajatu, • Sasyaka (Peacock ore), • Chapala and • Rasaka (Sphalerite)				

Uparasa					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Gandhaka (Sulfur) • Gairika (Red Ochre) • Kasisa (Green Vitriol) • Kankshi (Alum) • Haratala (Orpiment) • Manahshila (Realgar) • Anjana and Kankustha.				
Sadharana Rasa					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Kampillaka • Gauri pashana (Arsenic oxide) • Navasadara (Ammonium chloride) • Kaparda (Cowry) • Agnijara Giri Sindura (Red oxide of Hg) Hingula (Red Cinnabar) and • Mriddara shringa (Litharge).				
Dhatu					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Swarna (Gold) • Rajata (Silver) • Tamra (Copper) • Loha (Iron) • anga (Tin) • Naga (Lead) • Yashada (Zinc) • Kamsya (Bronze) • Pittala (Brass) • Vartaloha. • Dhatu -graha sambandha.				
Ratna					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Mukta (Pearl) • Pravala (Coral) • Tarkshya (Emerald) • Pushparaga (Topaz) • Vajra (Diamond) • Nilam (Sapphire) • Gomeda (Zircon or Cinnamone stone)				

	• Vaidurya (Cats eye) • Ratnapariksha • Ratnadosha • Ratna-graha sambandha				
Uparatna					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Vaikranta (Tourmaline) • Suryakanta (Sun stone) • Chandrakanta (Moon stone) • Rajavarta (Lapis lazuli) • Perojaka (Turquise) • Sphatikamani (Quartz) • Trinakanta • Palanka • Putika • Rudhir.				
Sudha varga					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Sudha (Lime stone) • Kaparda (Cowries) • Shukti (Oyster Shell) • Shankh (Conch Shell) • Mriga shringa (Stag horn) • Khatika • Godanti (Gypsum) • Samudraphena (Cattle Fish bone) • Kukkutanda twak (Hen's Egg Shell).				
Sikata varga					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Sikata (Silica) • Dugdhapashana (Talc) • Nagapashana/Jaharmohara(Serpentine) • Badarshama (silicate of lime) • Vyomashma (Sangeyashab-Jade) • Kousheyashma (Asbestos) and • Akika (Agate).				
Kshara varga					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and	• Sarja kshara (Sodium bicarbonate) • Yava kshara				

agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Tankana kshara (Borax) • Surya Kshara (Potassium Nitrate).				
Miscellaneous					
Students will be able to know the occurrence, synonyms, minerological identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya–apathya and ashuddha, apakwa and avidhee sevanjanya dosha and its management, important formulations.	• Mandura • Bola • Dam-ul Akhawayan (Raktabandhini), • Kasturi • Bhoonag • Mayurpiccha • Sarjarasa • Madhoocchishta.				
Visha and Upavisha					
Students will be able to know the introduction, collection and storage, classification, synonyms, shodhana, antidote, therapeutic and toxic doses, anupan, therapeutic uses, and formulations of following Visha and Upavisha.	• Vatsanabha • Kuchala • Jayapala • Dhattura • Bhanga • Bhallataka • Gunja • Arka • Snuhi. • Langali • Karaveera • Ahiphena and • Chitrakmool.				
Aushadhi Yoga Gyanam					
Student will be able to know the ingredients, manufacturing process, and bheshajprayogvidhi of following formulations.	• Arogya Vardhini Gutika • Kasturibhairava Rasa • Kumara Kalyana Rasa • Garbhapala Rasa • Chandraprabha Vati • Chandramrita Rasa • Pratapalankeshwara Rasa • Pravalapanchamrita Rasa				

	• Anandbhairava Rasa • Yogendra Rasa • Laxmivilas Rasa • Vasantakusumakara • Vasantamalati Rasa • Brihat Vata Chintamani Rasa • Shankha vati • Shwaskuthara Rasa • Hinguleswara Rasa • Hemagarbhapottali • Hridyarnava Rasa • Swarnavanga • Makaradhwaja • Putapakwavaisham • Jwarantaka Loha • Vatvidhvamsan Rasa • Kamadugha Rasa • Laghusutshekhar Rasa • Navayasa Loha • Saptamrita Loha • Tamra Parpati • Panchamrita Parpati • Sveta Parpati.				

Practical Rasashastra

Minimum Twenty five practicals to be performed

1. Rasa [Parada] Samanya Shodhana of Parada Kajjali, Mugdha rasa
2. Maharasa varga Shodhana of Abhraka
   Dhanyabhraka nirmana
   Shodhana of Makshika
   Shodhana of Shilajatu
   Shodhana of Sasyaka.
3. Uparasa varga Shodhana of Gandhaka
   Shodhana of Gairik
   Shodhana of Kasisa
   Shodhana of Kankshi
   Shodhana of Haratala
   Rasa manikya nirman
   Shodana of Manashila
4. Sadharana rasa varga Shodhana of Hingula
   Sodhana of Navasadar
   Shodhana of Kapardika
5. Sudha Varga Shodhana of Shankha, Shodhana of Shukti, Shodhana of Pravala mula, Shodhana of Godanti
6. Dhatu varga Samanya Shodhana of Lauha , Shodhana of Mandura, Samanya Shodhana of Tamra , Shodhana of Naga , Shodhana of Vanga, Shodhana of Yashada
7. Kshara Varga Shodhana of Tankana
8. Parpati Preparation of Rasaparpati, Bola, Parpati and Swetaparpati
9. Visha varga Shodhana of Vatsanabha, Bhallataka, Kupilu, Dhattura beeja, Jayapala, Gunja, Chitrakamoola.

Practical demonstration or Group Practical

1. Hingulad rasakrishti (Hingulottha Parada).
2. Bhasma: 4 (One from each group)
   - Abhraka bhasma, Swarna Makshika bhasma, Tamra bhasma
   - Vanga bhasma, Naga bhasma, Yashada bhasma
   - Mandura bhasma, Kasisa bhasma
   - Shankha bhasma, Kapardika bhasma, Godanti bhasma.
3. Pishti: 1 Pravala pishti, Jaharmohara / Akika pishti, Trina kantha mani pishti, Mukta pishti.
4. Druti: 1 Gandhaka druti.
5. Formulations 4 (one from each group)
   - Rasasindura, Swarna vanga, Sameer pannaga rasa
   - Saptamruta lauha, Punarnava mandura, Navayasa lauha
   - Agnitundi vati, Tribhuvana kirti rasa, Sootshekhara rasa, Laghusutashekhara Rasa
   - Arogyavardhini vati, Laghumalinivasanta rasa, Hinguleshwar rasa,
   - Anandbhairav rasa, Rajapravartini vati

Bhaisajjakalpana (Ayurvedic Pharmaceutics)

Learning Objectives	Contents	Teaching/ Learning Strategy	Teaching Aids	Hours/ Days	Assessment
Introduction of bhaishajyakalpana					
Students will be able to know the introduction of bheshaja, aushada, bhaishajyakalpana and its history and development and principles.	**Core** • History and Chronological (kramika vikasa) development of Bhaishajyakalpana. • Fundamental principles of Bhaishajya Kalpana. • Concept of Aushadha and Bheshaja.	-Lecture -Lecture (Ward) -Clinical case presentation -Self reading & Learning	-OHP -Video tapes, -TV, -VCR, Audio player. -Slide projector -Charts , Flow charts, -Models, Specimens -White board and marker -Chalk board and chalks -Computer and multimedia -Study guide and manuals Seminar	L- 20 hrs	-Written Eam. -Presentation -SEQ -Oral -MCQ -Practical -OSCE -Short case -Long case -At least 100 patients should be examined and treated for various diseases according to principles of treatment of Acharya Charaka -Minimum ten beds in the IPD of the hospital.
Ancient and Contemporary systems of 'Maana' (Units of measurement)					
Students will be able to know the study of Ancient and Contemporary systems of 'Maana' (Units of measurement.	• Shushka -ardra –drava- dravya grahan niyam (Rules of measures of dry, fresh, liquid drugs); • Grahyagrahyatva, Nava Puran dravya grahan niyam.				
Aushadhi dravya					
Students will be able to guidelines and methods of collection, storage, preservation of Aushadhi dravya	• Guidelines and Methods of collection, storage, preservation of Aushadhi dravya. • Concept of Saviryatavadhi (shelf life) and stability in ancient and contemporary science.				

Bheshajprayogavidhi					
Students will be able to detail of use and doses of Aushada.	• Aushadha Matra, • Anupana and sahapan and • Aushadh sevan kaala. (Posology).				
Panchavidha kashaya kalpana and Other kalpana					
Students will be able to know the details of Panchavidha kashaya kalpana and Other Kalpana.	• Kashaya Yoni • Swarasa • Kalka • Kwatha • Hima and Phanta • Pramathya • Aushadha siddha paniya • Tandulodaka • Laksha rasa • Mantha • Panaka • Arka • Churna • Rasakriya • Ghana • Phanita • Avaleha • Prasha • Gudapaka • Sharkara • Syrups • Ksheerapaka • Satva • Guggulu kalpana • Vati • Guti • Pinda • Modaka • Varti • Preparation of Tablets • Pills				

	• Capsule and Suppositories • Masi kalpana • Lavana kalpana • Kshara kalpana and • Kshara sutra.				
Instruments/ Equipments					
Students will be able to know the introduction and general knowledge of useful instruments/ Equipments	• Disintegrator • Mixer • Grinder • End Runner • Edge Runner • Sieve-Shaker • Granulator • Tableting machine • Pill making machines • Coating and polishing pan • Capsule filling machine, • Sieves and mesh.				
Sneha kalpana					
Students will be able to the details of sneha kalpana	• Sneha yoni, • Types of Sneha, • Sneha murchana vidhi, • Sneha paka vidhi, • Patra paka, types and their use. • Sneha siddhi lakshana, dose, • Preparation and uses of Triphala Ghrita, Bramhighrita, Narayana taila, Anutaila.				
Sandhana Kalpana					
Students will be able to know the details of sandhana Kalpana	• Madya Kalpana • Asava • Arishta • Sura (Prasanna -Kadambari - Medaka - Jagala - Bakkasa) • Maireya • Surasava • Shukta				

	• Kanjika • Sauviraka • Tushodaka • Sidhu kalpana their methods of preparation, • Siddhi lakshana, properties, uses, doses. • Takrarishta • Draksharishta • Ashokarishta • Dashamoolarishta • Kumaryasava • Chandanasava.				
Kritanna and Aushadhisiddha anna Kalpana					
Students will be able to the details of Kritanna and Aushadhisiddha anna Kalpana	• Definition of Kritanna • Concept of Pathya and Apathya • Yavagu –types of yavagu, Manda, Peya, Vilepi, Anna, Bhakta, Odan, • Yush -types, Krishara, Mansa rasa, Vesavara, Khad Kamblika, Raga, Shadava, Dadhi and • Takra Varga –Takra, Udasvita, Katvar, Mathita, Chhachika.				
Bahyopacharartha kalpana (External Applications)					
Students will be able to know the details of Bahyopacharartha kalpana (External Applications)	• Lepa -Types of Lepa, methods of preparation and mode of application. • Udvartan and Avachurnan, Method of preparation of Siktha Taila, • Malahara–Sarjarasa Malahara, Gandhak Malahara, Upanaha, Atasi upanaha, Shatadhouta and Sahastradhouta Ghrita. • Brief introduction of semi solid dosage forms-Ointments, Creams, Emulsions, Gels, Lotions.				
Preparation of formulations					
Students will be able to know the principles and precautions for preparation of following formulations.	• Netraupacharartha kalpana (Opthalmic preparations)–Seka, Drava, Pindi, Anjana - Ashchyotana - Tarpana - Putapaka and Vidalaka, Methods of preparation of eye drops,				

	eye ointments. • Nasyopacharartha Kalpana-Classification of Nasya, Navana, Avapidana, Pradhaman, Marsha and Pratimarsha nasya. • Dhumapanartha kalpana-Classification of dhumpaan, Method of preparation of dhumvarti and it's therapeutic uses. Dhupan: Vranadhupan, arshodhupan. • Mukhaprayogartha kalpana- Gandoosha-Kavala-Pratisaran, Tooth paste, Tooth powders and Mouth wash. • Basti kalpana-Classification, Method of preparation of Niruha and Anuvasana, Basti Therapeutic properties and uses of Basti.				
Miscellaneous					
	• Brief knowledge of Standardization of Ayurvedic formulations- Kasthaushadhi. • Brief introduction of Drug and Cosmetics Act 1940 and Rules 1945. • Concept of, Aushadhi Nirmanshala, with respect to Good Manufacturing Practices (GMP) in accordance to Schedule T.				

Practical Bhaishajya Kalpana

I. [Following practicals to be performed- (Minimum one from each category)]

Method of preparation, therapeutic uses, dose and anupana of the following

1. Swarasa- Ardraka swarasa, Tulasi swarasa, Kumari Swarasa, Vasa putapaka swarasa
2. Kalka- Nimba kalka, Rasona kalka.
3. Kwatha- Punarnavasthaka kwatha, Rasna Sapthaka kwatha, Kulattha kwath.
4. Hima- Dhanyaka hima, Sarivadi hima .
5. Phanta- Panchakola phanta,Yastimadhu Phanta.
6. Pramathya- Mustadi pramathya
7. Mantha- Kharjuradi mantha
8. Aushadh siddha paniya- Shadanga paniya
9. Laksha Rasa.
10. Arka - Yavani arka, Gulab arka, Misreya arka
11. Panaka- Chincha panaka, Chandan panaka.
12. Sharkara- Banapsha sharkara, Nimbu sarkara.
13. Churna- Sitopaladi Churna, Hinguwashtaka Churna.
14. Gutika- Chitrakadi Gutika, Sanjivani Vati.
15. Guggulu-Triphala Guggulu, Kaishora Guggulu.
16. Avaleha- Chyavanaprashavaleha, Vasavaleha, Vyaghri Haritaki avaleha, Manibadra avaleha.
17. Rasa kriya - Darvi Rasakriya, Guduchi Ghana, Kutaja Ghana.
18. Khanda- Haridra khanda, Narikela khanda, Sowbhagya shunti paka
19. Satva- Amruta satva,
20. Varti- Phala varti, Chandrodaya varthi
21. Lavana- Arka lavana, Narikela lavana
22. Masi- Triphala masi, Mayurpiccha Masi
23. Ksheerapaka- Arjuna ksheerapaka, Rasona ksheerapaka, Shunthi Ksheerpaka
24. Kshara- Apamarga kshara, Snuhi kshara, Ksharasutra. .
25. Manda, Peya, Vilepi, Yavagu, Krishra, Vesavara
26. Yusha - Mudga yusha, Saptamushtika yusha, Kulattha yusha
27. Aristha- Kutajarishta, Takrarishta .
28. Asava - Kumaryasava, Kanakasava
29. Sukta kalpana- Kanji
30. Udaka- Tandulodaka
31. Upanaha- Atasi Upanaha
32. Siktha Taila Nirmaan
33. Malahara- Sarjarasa malahara, Gandaka malahara, Cream, Emulsion. Sneha Kalpana, Sneha Murchhana - Ghrita Murchana, Taila Moorchhana, Ghrita kalpana: Jatyadighrita, Triphala ghrita, ksheerashatphala ghrita- Taila kalpana-Panchaguna taila,Arka taila, Bala taila,Jatyadi taila
35. Taila patana- Bhallataka taila patana, Jayapala taila patana
36. Shodhana- Guggulu, Hingu.

II. Visit of minimum three GMP approved Ayurvedic manufacturing units.

Reference Books

1. Adyatan Rasa Shastra R.K. Goyal
2. Abhinav Rasa Shastra Vaidya Somadev Sharma
3. Asava Arishta Vigyanam Dr. Pakshdhar Jha
4. Ayurvediya Rasa Shastra (Sachitra) Chandrabhusan Jha
5. Ayurvediya Rasa Shastra Badrinarayan Pandey
6. Rasa Bhaishajya Paribhasa Sureshananda Thapaliyal
7. Ayurvediya Rasa Shastra Prof. Siddhi Nandan Mishra
8. Ayurved Prakash Vaidya Gujrat Mishra
9. Drugs and Cosmetic Act - 1940
10. Paka Darpana Dr. Indradev Tripathi
11. The Paka-darpana of King Nala Dr. Madhulika critical study
12. Parada Vigyaniyam Vasudev M. Dwivedi
13. Pratyaksha Aushadh Nirmanam Acharya VishwanathDwivdei
14. Bhaishjyakalpana Vigyanam Dr. Agnihotri
15. Rasa Tarangini Sadanand Sharma
16. Rasa Darpan Prof. Bhajan Das Swami
17. Rasa Bindu Dr. Sanjay Sharma
20. Rasa Bhaishajya Kalpana Vigyan Vaidya Santosh Kumar Khandal
21. Rasa Mitra Dr. Tryambak Nath Sharma
22. Rasa Ratna Samuchchaya (Hindi) Dattattreya Ananta Kulkarni.
24.Rasaratna samuchchaya - Damodar Joshi
25. Rasa Shastra Prayogiki Srivastava, Yadav and Prof. Ramesh Saxena
26. Rasamritam Vaidya Yadavji Tirkramji Acharya
25. Rasayan Sara Vaidya Shyam Sunderacharya Vaishya
26. Rasendra Sampradaya Vaidya Hajari Lal Sukul
27. Rasendra Sara Sangraha Vaidya Gopal Krishna
29. Vaidyak Paribhasha Pradeep (Hindi Translation) Dr. Indradev Tripathi
30. Sharangadhara Samhita Dr. Radhakrishna Parashar
31. Bharatiya Bhaishajya Kalpana Vigyana Gananath Vishwanath Dwivedi
32. Bhaishajya Kalpana Vijnanam Dr. K Ramachandra Reddy
33. Rasa Shastra (English) Prof. Damodar Joshi
34. Rasa Ratna Samuchchaya (English) Prof. Damodar Joshi
35. Rasendra Chintamani (Hindi) Prof. Siddhinandan Mishra
36. Ayurvedic formulary of India
38. Ayurvedic Pharmacopiea of India, CCRAS
39. Bhaishjya Kalpana Vigyan Siddhi Nandan Mishra
40. Textbook of Rasashasra Dr. K Ramachandra Reddy.
41. Ashadhayoga Vigyanam Dr. K. Ramachandra reddy
42. Vaidyaka Paribhasha Pradipa (Enlgish Translation) Dr. K. Ramachndra Reddy &
Dr. P. Suresh
43. Relevant parts of Brihatrayee
44. Text book of Bhaishjya Kalpana - Dr Shobha G Hiremath
45. Text Book of Rasa Shastra Dr P H C Murthy
46 .Bhaishjya Ratnawali Prof S N Mishra
48 Yoga Ratnakar

Syllabus

of

AGADTANTRA & MEDICAL AYAN VIJYAN

(Forensic Medicine)

For
The Course of B.A.M.S Medical Students of Bangladesh

Published by
University of Dhaka
Bangladesh

Agadtantra & Medical Ayan Vijyan
(Forensic Medicine)

Toxicology (Agadtantra)

Learning Objectives	Contents	Teaching/ Learning Strategy	Teaching Aids	Hours/ Days	Assessment
Students will be able to Definition of toxicology, definition of poison, suicidal and homicidal poisons, classification of poisons, their action and route of administration, absorption, excretion, metabolism, diagnosis and general principles of treatment, duties of a medical practitioner in case of suspected poisoning & Antidote.	**Core:** • Derivation, definition of Visha and Agadatantra. Scope of Agadatantra. Visha Utpatti, Visha Prabhava, Visha Pranaharana Kriya, Visha Guna, Visha Gati, Visha Vega Visha Sankata, Shanka Visha. • Definition of toxicology, Definition of poison, suicidal and homicidal poisons, classification of poisons, their action and route of administration, absorption, excretion, metabolism, diagnosis and general principles of treatment, duties of a medical practitioner in case of suspected poisoning. • Origin and Classification of Visha:-Its sources, Difference between Visha, Madya and Oja guna, Visha Upadrava and Visha Mukta Lakshana. • Tests for detection of Visha, and Modern Toxicological Techniques of detection of poisons Visha Data Lakshana, Visha Peeta Lakshana, Signs and symptoms of Visha afflicted organs and personal effects. (Poisoning with Anjana, Lepa paduka, Abharana etc. • Introduction to Environmental Toxicology- Samuhika Vishaprayoga- effect of chemical and nuclear warfare. • Vishopakrama described by Charak, General Principles of Management of poisoning. • Manifestation of poisoning due to poisons of plant origin their fatal Dose, fatal period, management of poisoning, post mortem appearance and its medico legal importance. Visha and	-Lecture -Lecture (Ward) -Clinical case presentation -Self reading & Learning	-OHP -Video tapes, -TV, -VCR, Audio player. -Slide projector -Charts , Flow charts, -Models, Specimens -White board and marker -Chalk board and chalks -Computer and multimedia -Study guide and manuals Seminar	L- 20 hrs	-Written Eam. -Presentation -SEQ -Oral -MCQ -Practical -OSCE -Short case -Long case -At least 100 patients should be examined and treated for various diseases according to principles of treatment of Acharya Charaka - Minimum ten beds in the IPD of the hospital.

	Upavisha- Arka, Snuhi, Langali, Karaveera, Gunja, Ahiphena, Dhattura, Bhallataka, Vatsanabha, Kupeelu, Jayapala, Bhanga & Tobacco, Parthenium hysteriphorus, Chitraka, Eranda, Digitalis and Cerebra Odallam. • Garavisha, Dooshivisha, Viruddhahara. Food adulteration and poisoning–classification, diagnosis, management and contemporary significance. • Jangama Visha – Detailed study of Sarpa, Keeta, Loota, Vrischika, Mooshika, Alarka –Visha; Lakshana, Bheda, Chikitsa and their Sadhyasadhyata (contemporary and classical views).				
Students will beable to: • Define a poison. • Describe the factors modifying the action of poisons. • Classify poisons. • Describe the duties of a doctor in case of poisoning. • Outline the principles of management of acute poisoning. • Describe post-mortem appearances of respective poisoning cases	**General aspects of poisoning:** • Forensic Toxicology& general toxicology. • Poisons. • Factors modifying the action of poison. • Antidote. • Classification of poisons. • Principles of Management of acute & chronic poisoning. • Corrosive poisons: strong acids & alkalis. • Metallic poisons: Lead, Arsenic and Copper. • Delirients: Dhatura, Cannabis. ▪ Somniferous agents: Opium and its derivatives Hypnotics – Barbiturate. • Inebriates: Alcohol, Kerosine. • Gaseous poisons: Carbon monoxide, Chlorine & CO2, Cooking gass (methane). • Insecticides: Organo-phosphorus & chlorocomponds. • Snake Bite. ▪ Potka fish(Puffer fish) ▪ Madya and Madatyaya. Alcohol poisoning (Ethanol and Methanol).				

Forensic Medicine (Medical Ayan Vijyan)

Learning Objectives	Contents	Teaching/Learning Strategy	Teaching Aids	Hours/ Days	Assessment
Students will beable to:	• Definition of Vyavahara Ayurveda (Forensic medicine) and Vidhivaidyaka (Medical jurisprudence), concise history of Vyavahara Ayurveda (Forensic medicine) and Vidhivaidyaka (Medical jurisprudence). Discipline of Forensic Medicine and its subdivisions & Medical Jurisprudence. • Courts in Bangladesh and their jurisdiction: Supreme Court, High Court, Sessions Court, Additional Sessions Court, Magistrates Court, Metropolitan Magistracy. • Court procedures: Summons, conduct money, oath, affirmation, perjury, types of witness, types of examination, recording evidence, court questions, conduct of doctor in witness box, medical examiner's system. • Medical certification and Medico-legal reports including dying declaration & medical documentary evidence. • Death and its Medico Legal Aspects • Personal identity and its Medico legal aspects, forensic odontology, Introduction to Forensic Serology and DNA profiling. • Medico Legal autopsy and exhumation. • Dowry deaths (Domestic Violence), their Medico Legal importance and laws in relation to it. • Asphyxial deaths and its Medico Legal importance. • Medico Legal importance of Pregnancy, Delivery; Impotence & Sterility, Abortion, Infanticide, battered baby. Virginity, Artificial Insemination, Legitimacy. • Sexual offences and their Medico Legal aspects. Sexual perversions. • Wounds and its types& M.L Aspects • Injuries and thermal injuries, their medico Legal aspects, general introduction of weapons. • Introduction to Forensic psychiatry. • Introduction to forensic laboratory.				

	• Ethics as in classical Texts. Types of Vaidya, Pranabhisara and Rogabhisara Vaidya, Qualities of Vaidya, Responsibilities of Vaidya, Chaturvidha Vaidyavrutti, Duties of Vaidya to his patient, Vaidya Sadvrittam, Apujya Vaidya, Code of conduct. • Maintenance of medical record. • Physician's responsibility in criminal matters, Professional negligence, Civil negligence, Criminal negligence, Medico Legal aspects of Acquired Immune Deficiency Syndrome, Rights of an unborn child, Medical Termination of Pregnancy Act Transplantation of human organs Bill 1994, Pre Natal Diagnostic Testing Act, Malingering of feigned diseases, International Code of Medical Ethics for Doctors. Clinical establishment Act. Consumer Protection Act 1986.				
Students will beable to:	**CORE:** • Code and law of medical ethics, its history and Geneva declaration, Tokyo declaration& other declarations. • Bangladesh Medical & Dental Council (BMDC), its constituents, functions and disciplinary control. • Rights and privileges of a registered medical practitioner & ights of patients. • Professional secrecy & privileged communication • Medical Malpractice: civil & criminal, Negligence, • Misconduct. • "PHYSICIAN-PATIENT RELATIONSHIP" • Components of the physician-patient relationship • Fairness and Equity • Specific Health Issues • Jargons in the field of medical ethics. • CODE OF MEDICAL ETHICS OF BM&DC • Duties of a medical practitioner towards his patient and the society, Professional infamous conduct/misconduct. • Precuations against professional negligence. • Consent • Duties and responsibilities of a doctor. • Medical Maloccurance & Product Liabilities, vicarious liability.				

PRACTICAL

Practical Training

1. Post Mortem examination
2. Evidence in the court
3. Demonstrations in the Forensic & Toxicology museum (Toxic & Anti toxic substances, medico legal specimens & Charts)
4. Clinical postings
5. Library Hours for compilation

Distribution of Practical Marks

1. Post Mortem examination and Court posting – Case Record 10 Marks
2. Practical/Clinical Record Book 10 Marks
3. Identification (spotting) 10 Marks
4. Viva – voce 20 Marks

Total 50 Marks

Reference Books

1. Topics related to Agada Tantra from Charak Samhita, Sushrut Samhita, Ashtanga Hridaya, Ashtanga Samgraha, Kasyapa Samhitha, Yogaratnakara, Bhavaprakasha and Madhava Nidana.
2. Vidhivaidyaka (Vyavahar Ayurveda Vijnan) Dr.Charuchandra Pathak
3. Medical Jurisprudence and Toxicology Modi
4. Basavarajeeyam Edited by Vd.Govardhan
5. Agada Tantra Sh. Ramanath Dwivedi
6. Text book of Agada Tantra Edited by Dr Huparikar, Dr.Joglekar
7. Agadatantra ki Pathyapustaka Edited By Dr Huparikar, Dr.Joglekar
8. Agad Tantra Dr. Shekher Namboodri
9. Vishachikitsa Vaidya Balakrishnan Nair, Kerala (Ayurveda Toxicology English Translation)
10. Medical Ethics and Medical Laws in India Dr. H.S. Mehta
11. Toxicology Ayurvedic Perspective VPSV Ayurveda college Kottakkal
12. Kautilya Arthashastra (English) Prof. Kangle
13. Kautilya Arthashastra (Hindi) Dr. Raghunath Singh
14. Vyavahar Ayurveda Dr.Ayodhya Prasad Achal
15. Vyavahar Ayurveda Vigyanam Dr.Indramohan Jha (Sachchan)
16. Textbook of Forensic Medicine and Toxicology Dr. V.V.Pillay
17. Forensic Medicine Dr. B. Umadathan
18. Relevant Acts Govt. of India
19. Relevant topics from Manu Smriti

CURRICULUM

OF

KAYACHIKITSA

COURSE

FOR

BACHELOR OF AYURVEDIC MEDICINE & SURGERY (BAMS)

UNDER

UNIVERSITY OF DHAKA, BANGLADESH

KAYACHIKITSA (Memicine & Allied Subjects)

Paper – I: Clinical Dignosis and Charak's Principles & Practice of Medicine **Marks – 100: Formative-10, Written-90 (MCQ-20 +SAQ-70)**

Learning Objectives	Contents	Teaching/Learning Strategy	Teaching Aids	Hours/ Days	Assessment
Introduction to Kayachikitsa & Charak's Principles, Diagnosis and Treatment Students will be able to • Introduction of Kaya, Chikitsa, Kayachikitsha and Vyadhi, Chikitsha Chatushpada, Shamprapti, • Tridosh tatta, Shapta dhatu, Mala, Oja, Srotas, Agni • Chikitsa Sutra Sthana • Nidan, Prakar, Samprapti, Purbarupa, Rupa, DD, Anusandhan Pariksa, Chikitsa Sutra, Chikitsa, Pathya-Apathya, Jatilata and Sadya-Asadyata. • Doctors Patients relationship, Clinical skills, • History Taking	• Derivation of the terms 'Kaya', 'Chikitsa' and their definitions and synonyms. Definition of 'Kayachikitsa, Definition of 'Bheshaja'. Types and detailed description of Bheshaja and Chikitsa, Knowledge about Chikitsa Chatushpada. • Importance of Kriya Kaala according to stages of Dosha and their management. • Chikitsa sutra and Management of vriddhi (increased) and kshaya (decreased) of Dosha, Dhatu and Mala, Ojo Vyapat (Kshaya, Visramsa and Vyapat) and its management. • Chikitsasutra and Management of Sama-Nirama states, Roga-Anutpattikara Chikitsa, Roga Prashamana Chikitsa (Doshapratyanika, Vyadhipratyanika, Ubhayapratynika), Doshopakrama. • Chikitsa sutra and Management of Sthanantara Dosha (Ashayapakarsha, Anuloma/Pratiloma gati of Dosha, Vimarga gamana of Dosha). • Knowledge of Lina Dosha & its management, Diagnosis, Chikitsa Sutra and Management of Avarana and of Dhatu Pradoshaja diseases. • Importance of Dosha, Dushya , Bala, Kaala, Agni, Prakriti, Vaya, Sattva Satmya, Desha, Ahara and stage of diseases in treating them. Chikitsa Sutra and Management of 'Samanyaja and Nanatmaja'	-Lecture -Lecture (Ward) -Clinical case presentation -Self reading & Learning	-OHP -Video tapes, -TV, -VCR, Audio player. -Slide projector -Charts , Flow charts, -Models, Specimens -White board and marker -Chalk board and chalks -Computer and multimedia -Study guide and manuals Seminar	L- 20 hrs	-Written Eam. -Presentation -SEQ -Oral -MCQ -Practical -OSCE -Short case -Long case -At least 100 patients should be examined and treated for various diseases according to principles of treatment of Acharya Charaka -Minimum ten beds in the IPD of the hospital.

	diseases. • Detailed description of Dvividhopakrama (Santarpana and Apatarpana) and Shadavidhopakrama (Rookshana, Snehana, Swedana, Sthambhana, Langhana and Brimhana). • Detailed description of Shodhana, Shamana and Nidana Parivarjana. • Definition and Knowledge of Aushadha matra, Sevan kaala and Anupana, Pathya-Apathya with examples of diseases of various systems. • Derivation of the term 'Manas', its sthana (place), Guna (qualities) and Karma (functions). Samanya Chikitsa Siddhanta of Manasa Roga				
Charak's Princples & Practice Of Medicine The students will be able to learn about : • Table (Chart) preparation / Compilation. • Presentation of any 10 Shlokas out of total memorized Shlokas (written & oral) related with samprapti and chikitsa sutra. • Analysis of *srotasas*, Discussions about *dhatus* and their *vriddhi* and *kshaya* (Phenomenon of their increase and decrease). Ten proforma/ case sheets should be filled from the IPD/OPD. • Assessment of *Arishtas.* (Five proforma/ case sheets should be filled from the IPD/OPD). • Case sheet writing regarding treatment according to charak's Princples • Prescription writing by examining the patients in OPD & IPD in hospital.	**Details of** • Sutra Sthan • Nidana Sthan • Vimana Sthan • Sharir Sthan • Indriya Sthan • Chikitsa sthan • Kalpa sthan • Siddhisthan				
Rogi Roga Pariksha Siddhantha • Doctors Patients relationship, Clinical skills, • History Taking	• Astavidha & Dosavidha Pariksha • Approach to common symptoms of disease-Pain, Fever, Dyspnoea, Cough, expectoration and haemoptysis, Anorexia, Nausea, Vomiting,				

	Haematemesis, Melaena, Haematuria, Diarrhoea and dysentery, Constipation, Oedema, Abdominal swelling and ascites, Jaundice, Weight loss and weight gain, Fainting, Syncope & seizures, Palpitation, Headache, Dizziness and vertigo, Paralysis, Movement disorders and disorders of gait, Coma and other disturbances of consciousness, Common urinary symptoms including anuria, oliguria, nocturia, polyuria, incontinence and enuresis, Anaemia and bleeding, Enlargement of lymph nodes and spleen, Joint pain, neck pain and backache, History and concept of psychiatry, Approach to skin diseases. Principals of treatment/ management methods in Ayurved **Additional:** • Relationship of treatment methods between ayurvedic and allopathic medicine				
Introduction of general principles of maintenance of health and management of diseases of following systems of Medicine- • Yoga, Naturopathy, Unani , Siddha , Homeopathy , Acupuncture, Acupressure, Chines Traditional Medicine, Allopathy medicine, Physiotherapy and Rehabilitation, Physical Medicine etc.	• Yoga, Naturopathy, Unani, Siddha, Homeopathy, Acupuncture, Acupressure, Chines Traditional Medicine, Allopathy medicine, Physiotherapy and Rehabilitation etc.				

Kayachikitsa Practical: Paper I

Introduction

- **History Taking**
- **Doctor -Patient relationship**
- **Interpersonal skills**
- **Communication skills**
- **Ethical Behaviour**
- **Patient's Safety**
- **Referral services**
- **Medical Certificate**

General examination

- **Appearance**
- **Built**
- **Nutrition**
- **Hydration status**
- **Decubitus**
- **Anthropometric measurement**
- **Anaemia,**
- **Jaundice,**
- **Cyanosis**
- **Clubbing,**
- **Koilonychia,**
- **leukonychia**
- **Oedema,**
- **Dehydration,**
- **Pulse, BP,**
- **Temperature,**
- **Respiration**
- **JVP**
- **Lymph node**
- **Thyroid, salivary gland**
- **Skin, Hair, Nail**
- **Skin (Petichae, purpura, echymosis, bruise, haematoma, rashes),**
- **Pigmentation**
- **Hair distribution**
- **Nail**
- **Breast**
- **Eye –Proptosis**

Reference Books

Edited by Brian R. Walker	Davidson's Principles and Practice of Medicine, 22nd Edition
Harrisons Internal Medicine	Fauchi.
Short Cases Medicine.	Shahidul
Long Cases Medicine.	Shahidul
Short Case & Clinical Medicine	A.B.M.Abdullah.
Scientific Basis of Ayurvedic Therapies	Mishra
Charaka Samahita	PV Sharma
Sushruta Samahita	Kalikingkar Sen Sharma
Yogratnakar (English)	Dr. Nirmal Saxsena
Chakradutta (English)	Acharya Priyavrat Sharma
Kayachikitsa	Dr. Ganga Sahay Pandey
Kayachikitsa	Dr. Suresh Babu
Kayachikitsa	Prof. Banwari Lal Gaur
Kayachikitsa	Prof. Shiv Charan Dhyani
Introduction to Kayachikitsa	C Dwarakanath
Madhavchikitsa	Madhavkar
Siddha Prayoga Latika	Vd. Gulraj Sharma Mishra
Vishikhanupravesh vijnana	Vd. Gulraj Sharma Mishra
Kaya chikitsa samanvaya	Dr. Anant Ram Sharma
Siddha Vaidyakam	V.V. Natraj Sharstri
Vaidya Chintamani	Ballabhacharya
Vaidya Jeevan	Lolimbaraja
Chamatkar Chintamani	Lolimbaraja
Pathya-Apathya-Vinirnaya	Vishwanath Kaviraj
Ayurvediya PathyapathyaVijnana	Dr. Badri Prasad Shah
Yog Chandrika	Laxman Pandit, Dr. AshaKumari, Prof. Premvati Tiwari
Atyayik Vyadhi Nidana Chikitsa	Dr. Bramhadutt Sharma
Atyayik Vyadhi Nidana evam Pratikara	Dr. Anant Ram Sharma, Dr.Krishna Chandra Verma & Dr.Sanjay Sharma
Ayurvediya PanchkarmaChikitsa	Acharya Mukandi Lal Drivedi
Ayurvediya Panchkarma Vijana	Dr. Haridas Shridhar Kasture
Keraliya Panchakarma	Dr. T.L. Devraj
Ayurvedic Remedies for common disease	Dr. T.L. Devraj
Panchakarma Chikitsa Vijnana	Dr. R.A. Prasad & Dr. G.K. Gurjar
Panchakarma Chikitsa	Prof. Divakar Ojha
Holistic Principle of Ayurvedic Medicine	Prof. Ram Harsh Singh
Kayachikitsa	Prof. Ram Harsh Singh
Madak Dravyajanya roga evam unki chikitsa	Dr. Priya Kumar Chobe
Vasava Rajiyam	Vd. Goverdhan SharmaChangani
Manas Roga Vijnana	Dr. Balkrishna Amar Ji Pathak
Ayurvediya Manas Vijnana	Prof. Ram Harsh Singh
Adhunik Manas Rog Vijnana	Dr. Rajendra PrasadBhatnagar
Psychiatry in Brithatrayi	Dr. Kamta Prasad Shukla
Psychopathology in Indian Medicine	Dr. Satyapal Gupt
Yoga against Spinal pain	Pt. Shiv Sharma
Rasayan and Vajikarana	Vd. Mohan Lal Pathak
Rasayan and Vajikarana	Vd. Upadhyaya (Jaipur)
Science of Longivity by Ayurveda	Prof. Subhash Ranade
Adhunik Chikitsa Shastra	Dharmdatta Vaidya
Chikitsa Tatva Deepika	Acharya Mahaveer PrasadPandey
Useful parts of Charaka, Sushrut and Vagbhatta	

KAYACHIKITSA (MEDICINE)

Paper – II: General Medicine **Marks – 100, Formative-10, Written-90, (MCQ-20 +SAQ-70)**

Learning Objectives	Contents	Teaching/ Learning Strategy	Teaching Aids	Hours/ Days	Assessment
Diseases of the Gastrointestinal System (Annabaha srotas) The students will be able to: • Applied anatomy and Physiology of Gastrointestinal System • Paribasha, Nidan, Prakar, Purbrupa, Rupa, Samprapti, Samprapti ghataka, Differentail diagnosis, Anusandhani pariksa, Chikitsa sutra, Chikitsa, Pathya and Apathya	**Core:** • **Presenting Problems**: Arochaka (Anorexia), Agnimandya (Dyspepsia), Hicca (Hiccup), Ajeerna (Indigestion), Malabsorbption syndrome, Vibandha (Constipation). • **Diseases of Mouth, Salivary Glands & Esophagus**: Aphthous Ulceration, Gastro-Esophageal Reflux Disease, Achalasia of the Esophagus, Carcinoma of the Esophagus. • **Diseases of the Stomach & Small Intestine:** Annadrava Sula (Gastric ulcer), Parinama Sula (Duodenal ulcer), Atisara (Diarrhoea), Pravahika (Dysentery), Visuchika (Cholera), Giardiasis. (Worm infestation) • **Disorders of the Colon & Rectum:** Grahani (IBS), Arsa roga (Haemorrhoids), Bhagandara (Fistula). • **Diseases of the Liver, Gall Bladder & Pancreas:** Kamala (Jaundice), Yakruta pradaha (Hepatitis), Yakruta shotha (Liver abscess), Yakruta suskata (Liver Cirrhosis), Pliha Roga (Spleenic Disorder) & Pittasmari (Cholecystitis), Pancreatitis. • **Additional: Others**: Rakta pitta, Halimak, Jaloudara, Acute abdomen, Ca- GIT/ Colon, Hepatotoxicity of drugs.	Lecture Ward Teaching	OHP Video tapes, TV, VCR, Audio player. Slide projector Charts , Flow charts, Models, Specimens White board and marker Chalk board and chalks Patients Computer and multimedia Study guide and manuals Seminar	L- 12 hrs	Writer MCQ OSCE Viva Short case
Diseases of the Respiratory System (Pranabaha Srotas) The students will be able to: • Applied anatomy and Physiology of Gastrointestinal System • Paribasha, Nidan, Prakar, Purbrupa, Rupa, Samprapti,	**Core:** • **Presenting Problems:** Cough, Sputum Production, Hemoptysis, Breathlessness, and Wheeze. • **Upper respiratory tract infections (URTI)**: Rhinitis, Common Cold, Sinusitis, Pharyngitis,	Lecture (Ward) Clinical case presentation Self reading &	OHP Video tapes, TV, VCR, Audio player. Slide projector Charts , Flow charts,	L- 13 hrs	Written examinatio n SEQ Oral

Samprapti ghataka, Chikitsa sutra, Chikitsa, Pathya and Apathya of various respiratory diseases.	Laryngitis, Tonsilitis • **Lower respiratory tract infections (LRTI)**: Bronchitis, Bronchiolitis, Pneumonia, Pulmonary tuberculosis, Lung abscess. • **Inflammatory Lung Diseases**: Bronchial asthma, Chronic obstructive pulmonary disorder (Emphysema & Bronchiectasis)**,** Cystic fibrosis. • **Pleural cavity diseases**: Pleural effusion, Pneumothorax. • **Pulmonary vascular disease**: Pulmonary embolism, pulmonary arterial hypertension or cor pulmonale. • **Malignant Lung Diseases**: Tumours of the broncus & lung, Neoplasm of the lung, Ca- lung • **Common occupational lung diseases**: Sarcoidosis • **Others:** Respiratory failure.	learning Demonstration of X-rays	Models, Specimens White board and marker Chalk board and chalks Computer and multimedia Study guide and manuals Seminar		MCQ Practical OSCE Short case Long case
Diseases of the Cardiovascular system (Rasabaha srotas) The students will be able to: • Applied anatomy and Physiology of Gastrointestinal System • Paribasha, Nidan, Prakar, Purbrupa, Rupa, Samprapti, Samprapti ghataka, Chikitsa sutra, Chikitsa, Pathya and Apathya of various cardiovascular diseases.	**Core:** • Applied Anatomy, Physiology & Investigations of CVS. • **Presenting Problems:** Chest Discomfort or Pain, Breathlessness, Palpitation, Dizziness or Syncope, Oedema. • **Disorders of Heart Rate, Rhythm and Conduction:** Sinus Arrhythmia, Sinus Tachycardia, Atrial Ectopic Beats, Ventricular Ectopic Beats, Atrial Tachycardia, Sinoatrial Disease, Atrioventricular & Bundle Branch Block, Atherosclerosis. • **Coronary artery disease (CAD)/ ischemic heart disease (IHD)/ coronary heart disease**: Angina, Myocardial infarction **Vascular heart disease*:*** Peripheral ***artery disease*** (PAD), Hypertension (HTN), Chronic heart failure (CHF)/Congestive cardiac failure (CCF), Left ventricular hypertrophy. • **Valvular heart disease**: Reheumatic fever and Reheumatic heart disease, Valvular diseases of	Lecture (Ward) Clinical case presentation Self reading & learning Demonstration of X-rays		L- 12 hrs	MCQ SEQ OSCF Short case X-rays

	heart • **Congenital heart defect (CHD):** Aortic stenosis, Atrial septal defect **(ASD),** Ventricular septal defect **(VSD),** Coarctation of the aorta **(CoA),** Tetralogy of Fallot **(ToF).** • **Heart muscle disease**: Cardiomyopathy • **Inflammatory heart disease**: Endocarditis, Myocarditis.				
Diseases of Urinary System (Mutrabaha Srotas)	**Core:** • **Presenting Problems:** Urinary frequency, Urinary urgency, Nocturia, Polyuria, Oliguria, Anuria, Hematuria, and Proteinuria. • **Glumerular Diseases**: Glomerulonephritis, Nephrotic syndrome, Nephritic syndrome • Renal Parenchymal Diseases: Renal failure or Kidney failure, Acute kidney injury **(AKI)**/ Acute renal failure **(ARF),** Chronic kidney disease **(CKD).** • Infectious diseases: Urinary tract infection **(UTI),** Cystitis, Prostatitis. Nephritic & Nephrotic illness • Renal Obstructive Diseases: Kidney stone or Renal calculus/Urolithiasis, Ureterolithiasis, Nephrolithiasis UTI/ Pyelonephritis • **Miscellaneous:** Benign prostatic hyperplasia **(BPH),** Polycystic kidney disease **(PKD),** Kidney tumors , Renal artery stenosis ARF				

Disease of the Blood (Raktabaha Srotas) The students will be able to: • Applied anatomy and Physiology of Blood System • Paribasha, Nidan, Prakar, Purbrupa, Rupa, Samprapti, Samprapti ghataka, Chikitsa sutra, Chikitsa, Pathya and Apathya of various blood diseases.	**CORE:** • **Anaemia:** Iron deficiency anemia • **Common Haemolytic anaemia:** Thalassaemia, Sickle cell anaemia and acquired haemolytic anaemia • **Common bleeding disorders**: Thrombocytopenia and hemophilia • **Agranulocytosis and aplastic anaemia** • **Leukaema**: Acute and chronic • **Lymphoma** • **Multiple myelomas** **Additional:** • Megaloblastic anaemia, DIC	Lecture (Ward) Clinical case presentation Self reading & learning Demonstration of X-rays		L- 9 hrs	SEQ Practical Oral
Endocrine and Metabolic diseases: (Medobaha srotas) The students will be able to: • Applied anatomy and Physiology of Endocrine System • Paribasha, Nidan, Prakar, Purbrupa, Rupa, Samprapti, Samprapti ghataka, Chikitsa sutra, Chikitsa, Pathya and Apathya of various Endocrine systems.	**Core:** • **Diabetes mellitus** • **Disorders of thyroid, parathyroid glands**: Hyperthyroidism, Hypothyroidism, Simple goiter, Solitary thyroid nodule,Thyrotoxicosis • **Disorders of hypothalamus and pituitary gland**: Acromegaly, Sheehan's syndrome. • **Disorders of adrenal gland:** Cushing's syndrome, Addison's disease • Prameha • Dyslipidaemia	Lecture Ward Teaching		L- 6 hrs	SEQ Oral Practical SOCE
Diseases due to infectious and communicable diseases The students will be able to: • Paribasha, Nidan, Prakar, Purbrupa, Rupa, Samprapti, Samprapti ghataka, Chikitsa sutra, Chikitsa, Pathya and Apathya	• Description of various types of Fevers like Typhoid fever (Antrik jwara), Yellow fever, Dengue Fever, Chikun Guniya, Viral Fever, Malaria fever, Kala Jwara. • Description of Mumps, Meningitis, Encephalitis, Tetanus, Plague Leptospirosis, Anthrax, Masurika (Small pox), Laghu Masurika (Chicken pox), Romantika (Measles), Filariasis, Leprosy, Tuberculosis, cholera, diarrhoea, food poisoning, amoebiasis, giardiasis, helminthiasis, rabies, brucellosis, herpes simplex, herpes zoster, viral hepatitis, viral haemorrhagic fever, STD-AIDS.				

Kayachikita Practical: Paper II

Systemic examination of

- Gastrointestinal System
- Respiratory System
- Cardiovascular System
- Urinary System
- Endocrine System

Clinical Presentation of

Respiratory System

- Shortness of breath
- Haemoptysis
- Cough
- Sputum
- Chest pain
- Fever

CVS

- Palpitation
- Chest pain
- Leg oedema
- Shortness of breath

GIT

- Abdominal pain
- Haematemesis and Melaena
- Loss of appetite
- Diarrhoea & Constipation
- Haematochezia
- Nausea, vomiting
- Weight loss
- Difficulty in swallowing

Hepatobiliary

- Jaundice
- Abdominal swelling
- Impaired consciousness

Urinary System

- Puffiness of face
- Oliguria & anuria, Polyuria
- Dysuria

- Incontinence
- Nocturnal enuresis
- Loin pain
- Pus per urethra

Endocrine System

- Swelling of neck
- Weight gain
- Weight loss

Haemopoetic system

- Pallor
- Bleeding

Common Clinical Procedures

- Injections
- IV infusionand transfusion
- FIRST AID
- Intubation
- CPR
- Hyperpyrexia
- ECG
- Skin Sensitivity Test
- Lumbar puncture
- Bone marrow aspiration
- Thoracocentesis / paracentesis
- Oxygen Therapy
- Oropharygeal suction
- Shock management
- Brochodilator inhalation technique, nebulization
- Urethral Catheterisation

Reference Books

Edited by Brian R. Walker	Davidson's Principles and Practice of Medicine, 22nd Edition
Harrisons Internal Medicine	Fauchi.
Short Cases Medicine.	Shahidul
Long Cases Medicine.	Shahidul
Short Case & Clinical Medicine	A.B.M.Abdullah.
Scientific Basis of Ayurvedic Therapies	Mishra
Charaka Samahita	PV Sharma
Sushruta Samahita	Kalikingkar Sen Sharma
Yogratnakar (English)	Dr. Nirmal Saxsena
Chakradutta (English)	Acharya Priyavrat Sharma
Kayachikitsa	Dr. Ganga Sahay Pandey
Kayachikitsa	Dr. Suresh Babu
Kayachikitsa	Prof. Banwari Lal Gaur
Kayachikitsa	Prof. Shiv Charan Dhyani
Introduction to Kayachikitsa	C Dwarakanath
Madhavchikitsa	Madhavkar
Siddha Prayoga Latika	Vd. Gulraj Sharma Mishra
Vishikhanupravesh vijnana	Vd. Gulraj Sharma Mishra
Kaya chikitsa samanvaya	Dr. Anant Ram Sharma
Siddha Vaidyakam	V.V. Natraj Sharstri
Vaidya Chintamani	Ballabhacharya
Vaidya Jeevan	Lolimbaraja
Chamatkar Chintamani	Lolimbaraja
Pathya-Apathya-Vinirnaya	Vishwanath Kaviraj
Ayurvediya PathyapathyaVijnana	Dr. Badri Prasad Shah
Yog Chandrika	Laxman Pandit, Dr. AshaKumari, Prof. Premvati Tiwari
Atyayik Vyadhi Nidana Chikitsa	Dr. Bramhadutt Sharma
Ayurvediya PanchkarmaChikitsa	Acharya Mukandi Lal Drivedi
Ayurvediya Panchkarma Vijana	Dr. Haridas Shridhar Kasture
Ayurvedic Remedies for common disease	Dr. T.L. Devraj
Panchakarma Chikitsa Vijnana	Dr. R.A. Prasad & Dr. G.K. Gurjar
Panchakarma Chikitsa	Prof. Divakar Ojha
Holistic Principle of Ayurvedic Medicine	Prof. Ram Harsh Singh
Kayachikitsa	Prof. Ram Harsh Singh
Madak Dravyajanya roga evam unki chikitsa	Dr. Priya Kumar Chobe
Vasava Rajiyam	Vd. Goverdhan SharmaChangani
Manas Roga Vijnana	Dr. Balkrishna Amar Ji Pathak
Ayurvediya Manas Vijnana	Prof. Ram Harsh Singh
Adhunik Manas Rog Vijnana	Dr. Rajendra PrasadBhatnagar
Psychiatry in Brithatrayi	Dr. Kamta Prasad Shukla
Psychopathology in Indian Medicine	Dr. Satyapal Gupt
Rasayan and Vajikarana	Vd. Mohan Lal Pathak
Rasayan and Vajikarana	Vd. Upadhyaya (Jaipur)
Science of Longivity by Ayurveda	Prof. Subhash Ranade
Adhunik Chikitsa Shastra	Dharmdatta Vaidya
Chikitsa Tatva Deepika	Acharya Mahaveer PrasadPandey
Clinical methods in Ayurveda	K. R . S. Murthy
Oxford Handbook of Clinical Examination and Practical Skills	Oxford Handbooks
Symptoms & Signs In Clinical Medicine	Chamberlains
Clinical Methods	Hutchison's

Syllabus
of

Swasthavritta
(Community Medicine)

For
The Course of B.A.M.S Medical Students of Bangladesh

Published by
University of Dhaka
Bangladesh

DEPARTMENTAL OBJECTIVES

General objective:

- To produce medical graduates to meetcommunity health needs anddemands of the country.

Specific objectives: At the end of the course, the students should be able to:

1. Provide comprehensive health care to the people
2. deliver primary health care andessential services package
3. conduct epidemiological studies on common health problems
4. organise health education sessions in the community / OPD
5. provide health care withappropriate attitudes
6. work as a member of healthteam
7. co-ordinate with national and international health organizations and national health
8. programmes

List of Competencies to acquire:

1. Identify health needs and problems of the community and prioritise them.
2. Take measures to meet health needs and problems
3. Provide comprehensive health care to the community
4. Organize health education sessons at the level ofcommunity
5. Collect and compile sociodemographic data from the community
6. Tomanage masscasuality incident
7. Conduct community based research work and write report

Swasthavritta (Community Medicine)

Swasthavritta (Community Medicine) **Marks –100: Formative-10, Written-90 (MCQ-20 +SAQ-70)**

Learning Objectives	Contents	Teaching/Learning Strategy	Teaching Aids	Hours/ Days	Assessment
Concept of Public Health, Community Medicine,Health and Disease					
Students will be able to: • Define: Community, Community medicine, Public Health, Comprehensive health care, Hygiene, Health, Disease, Preventive medicine, Social medicine, Family medicine • Explain epidemiological triad in causation of disease • Classify agents for causation of diseases • List the host factors responsible for diseases • Describe the environmental factors of disease causation • Illustrate the natural history of disease. • Describe the multifactorial aetiology of disease • Describe social factors related to health • Mention the health indicators and their interpretations • Describe common health andsocial problems of Bangladesh	**CORE** • Concept of Public Health and Community Medicine • Concept of Health and Disease • Common Health and Social problems • Health Team Concept • Changing concepts of PublicHealth and Health • Natural history of disease • Indicators and Determinants of Health • Prevention and Intervention of Diseases • Characteristics of Ideal Health Care • Concept of wellbeing and its objective, subjective, standard of living, quality of life.	-Lecture -Lecture (Ward) -Clinical case presentation -Self reading & Learning	-OHP -Video tapes, -TV, -VCR, Audio player. -Slide projector -Charts , Flow charts, -Models, Specimens -White board and marker -Chalk board and chalks -Computer and multimedia -Study guide and manuals Seminar	L- 20 hrs	-Written Eam. -Presentation -SEQ -Oral -MCQ -Practical -OSCE -Short case -Long case -At least 100 patients should be examined and treated for various diseases according to principles of treatment of Acharya Charaka - Minimum ten beds in the IPD of the hospital.
Behavioural Science					
Students will be able to: o define: Behaviour, Behavioural science, Anthropology, Psychology Sociology, Society, Family, Culture Motive and Motivation, Personality and IQ o Describe the elements of medical psychology o Explain the concepts of perception, cognition, learning, motivation, emotion, attitude	**CORE** • Concept of Behavioural Science • Components of Behavioural Science. • Perception, Learning, Motivation, Attitude, Emotion • Social, Cultural and Psychological Factors In Health and Illness • Doctor-Patient Relationship • Family and Society				

○ State the effects of culture andcustom factors on health ○ Describe the impact of urbanization on health and disease ○ Value the importantce of doctor-patient relationship for effective health care services ○ Describe different types leadership andmention the characteristics of an ideal leader • 8. describe the role of family in health and illness	• Social Change In Health andDisease • Behavioural Change Communication (BCC) • Intelligence • Personality • Leadership				
Health Communication & Health Education					
Health Communication: Students will be able to: • Define andclassify communication • State functions of communication • State the elements of communication • Classify methods andmedia for communication • Mention communication skills • Describe barriers of communication **Health Education:** Students will be able to: • Define health education • State the objectives, principles, contents, approaches of health education • State the stages of adoption of new ideas and practices	**CORE** Health Communications: • Functions • Elements • Barriers • Media and methods Health Education: • Objectives • Contents • Principles • Approaches • Stages of adoption of a new idea				
Medical Entomology					
Students will be able to: • Define and classify arthropods of medical importance • Describe the morphology andlifecycle of important arthropods • Enumerate the vector borne diseases • Describe the principles of vector control measures • Use specific insecticides	**Classification of Arthropods of medical importance** • Metamorphosis of Arthropods • Arthropod-borne diseases. • Principles of Vector/Arthropod control measures • Insecticides				

Biostatistics					
Students will be able to: • Define Bio-statistics and Vital statistics • Define andclassify data • Define andclassify variable • Define: study population, sample, sample size; • Describe sampling techniques • Calculate central tendency: mean, median, mode • Calculate measure dispersion: variance, standard deviation (SD); • Analyse andpresent data accordingly such as: table andgraphs etc. • Describe normal distribution curve	**Introduction to Bio-statistics** • Uses of Bio-statistics • Vital statistics • Data andVariable • Sample andSampling techniques • Methods andTools of data collection • Interpretation of data • Analysis andPresentation of data • Measures of central tendency • Measures of dispersion • Normal distribution curve				
Environment & Health					
Students will be able to: • Define environment and describe its components Water • Mention the criteria of safe andwholesome water • State the sources, uses andrequirement of water • Mention types of water impurities. • Explain the principles andmethods of purification of water • State the water quality standards for drinking water • State the water borne diseases **Air and ventilation** • State the composition of air andindicators of air pollution • State the air pollutants andtheir sources • Describe the effects of air pollution on health • Describethe methods of prevention andcontrol of air pollution • Define andclassify ventilation	**Environment and its components** **Water** • Safe andwholesome water • Sources, uses andrequirement of water • Water impurities • Principles andmethods of purification of water • Water quality standards for drinking water • Water borne diseases **Air andventilation** • Composition of air • Air pollutants andtheir sources • Indicators of air pollution • Effects of air pollution on health • Methods of prevention andcontrol of air pollution • Ventilation • Climate change and green house effect **Light** • Criteria of good lighting • Measurements of light • Effect of improper lighting on health				

• Describe effects of ill ventilation on health • Describe the impact of climate change and global green house effect **Light** • State criteria of good lighting • Mention measurements of light • Describeeffect of improper lighting on health **Noise** • Describe the sources andproperties of noise • Mention the acceptable noise levels • State effects of noise exposure • Describe the control measures of noise **Radiation** • Statethe sources andtypes of radiation • State effects of radiation on health • Describe measures of radiation protection **Housing** • State the criteria of healthful housing andhousing standards • Describethe effects of poor housing **Disposal of solid waste** • Define solid waste andmention its sources • Mention health hazards of solid wastes • State the methods of solid wastes disposaland medical biotechnology **Excreta disposal** • State the methodsof excreta disposal • Explain sanitation barrier • Mention the diseases borne by human excreta	**Noise** • Sources andproperties of noise • Acceptable noise levels • Effects of noise exposure • Control measures of noise **Radiation** • Sources andtypes of radiation • Effects of radiation on health • Measures of radiation protection **Housing** • Criteria of healthful housing • Housing standards • Effects of poor housing **Disposal of solid waste** • Solid waste andits sources • Methods of disposaland medical biotechnology • Health hazards of solid wastes **Excreta disposal** • Methods of excreta disposal • Sanitation barrier • Diseases borne by human excreta				
Immunity, Immunization					
Student will be able to • Define andclassify immunity • Classify immunizing agents • State immunization schedule • List adverse effects ollowing immunization • Explain herd immunity • Describe EPI and NID	**CORE** **Immunity andImmunization** • Immunization • Immunizing agents • Immunization schedule • Adverse Events following Immunization • Herd immunity				

• Define cold chain andmention its equipments • Explain the importance of maintaining cold chain at different levels • Describe left out and drop out in EPI • Describe Disinfection andsterilization	• EPI andNID • Cold chain • Left out anddrop out				
Public Health Nutrition					
Students will be able to: • Classify food andits sources assess nutritional status: • Collect, record andinterpret the data on Road to Health Card (growth chart), estimate BMI • State normal values and range of indices used for growth monitoring, nutritional status and grading of PEM • Identify different types Vitamin deficiency diseases • State minerals andtrace elements essential for health • Assess the prevalence and types of malnutrition in the community by different methods: Dietary survey, anthropometry, clinical examination. • Enumerate the food borne, milk borne diseases andfood intoxication • State methods of milk purification, specially process of pasteurization • State the process of humanization of cow's milk ,explain balanced diet	**Types of foods andits sources** • Balanced diet • Protein Energy Malnutrition (PEM) • Vitamins and their deficiency diseases. • Minerals and trace elements • Assessment of nutritional status • Calorie requirements of different groups • Food borne, milk borne diseases andfood toxins • Pasteurization • Food adulteration, additives andfortification • Humanization of cow's milk				
Principles of Epidemiology					
Students will be able to: • Define epidemiology • State the aims anduse of epidemiology • Explain the components of epidemiology • Define terms related to epidemiology: Communicable disease, Non-communicable disease, Infection, Infestation, Contamination, Infectious disease,	**Epidemiology:** • Concept • Components • Aims anduses • Approaches • Measurements andtools o Epidemiological triad o Definition of Epidemiological terms				

Contagious disease, Period of communicability, Incubation period. Sporadic disease, Endemic disease, Epidemic disease, Pandemic disease, Zoonotic disease, Disease prevention, Disease control, Elimination, Eradication, Isolation, Quarantine • Describe Epidemiological triad • State the approaches, measurments andtools of epidemiology • Classify epidemiological studies • Describe descriptive andanalytical studies • State the characteristics of experimental studies distinguish between cross-sectional andlongitudinal; cohort and casecontrol studies • Describe the steps of investigations of an epidemic Outbreak • Define andclassify screening • Define specificity, sensitivity, validity, reliability and predictive value of a screening test • Define andclassify source and reservoir • Explain modes of transmission of diseases • describe the interruption of modes of disease transmission • Describe the criteria of a susceptible host • Describe the host defence mechanism • Explain the steps for controlling the reservoir of infectious diseases • Define andexplain community diagnosis and community treatment • Explain basic concepts andstate contents of a scientific research. • Develop a research protocol • State monitoring andservillance	andconditions ○ Methods of epidemiological studies ○ Epidemic andits investigation ○ Research methodology ○ Community diagnosis andtreatment ○ Investigation of an epidemic ○ Screening tests ○ Dynamics of transmission of communicable diseases ○ Principles of prevention andcontrol of communicable ○ diseases ○ Monitoring ○ Surveillance				

Epidemiology of Communicable & Non-Communicable Disease (NCDs)					
The students will be able to: • State the epidemiological determinants (agent, host and environmental factors) of common diseases • Explain risk factors of NCDs • Describe the measures of prevention of common health problems in the community , specially EPI diseases, Helminthiasis and Diarrhoeal diseases, STDs andselected vector borne diseases, Describe the preventive measures of common health problems in the community, Define , classify Disaster, Mass Casualty Management, triage and • Accidents • Describe Geriatric health problems • Describe factors of substance abuse	**CORE** **Epidemiology and Prevention of:** • EPI diseases • Diarrhoeal diseases andEnteric fever • Malaria, Kala-azar, Filaria, Helminthiasis • Leprosy • Viral hepatitis, Dengue, ARI, SARS, Bird flu • Rabies, Chicken pox, Mumps, Rubella, Yellow fever • STDs • Emerging andRe-emerging Diseases **Epidemiology andPrevention of common noncommunicable diseases:** • Hypertension, IHD andStroke • Tobacco as risk factor for NCD • Rheumatic fever and RHD • Cancer • Diabetes • Obesity • Arsenicosis • Disaster • Accidents (RTA, domestic, industrial) • Mass Casualty Management(MCM) • Triage • Geriatric problems • Substance abuse				
MCH-FP & Demography					
Students will be able to • Define MMR, IMR • State the components of MCH care package • State factors influencing maternal andinfant mortality and morbidity • State the measures for reducing maternal andinfant mortality and morbidity • Mention the organisations involved forMCH care	**MCH** • Objectives of antenatal, intranatal andpostnatal care, advices and • investigations • High risk mothers and at risk child • IMR, MMR • Care of under-5 children • IYCF (Infant andYoung Child Feeding):				

• Define low birth weight baby andmention its risk factors • Describe EMONC • plan for interventions of low birth weight • Describe ANC, intranatal andpostnatal care • State Concept of IYCF • Mention the recommended feeding practices in IYCF • Identify the barriers of recommended IYCF practices • State the composition andpreparation of complementary foods • Explain advantages of breast feeding anddisadvantages of formulafeeding • Advise for domiciliary andInstitutional delivery • Identify high risk mother and at risk child **MCH** • Objectives of antenatal, intranatal andpostnatal care, advices and investigations • High risk mothers and at risk child • IMR, MMR • Care of under-5 children • IYCF (Infant andYoung Child Feeding): • What is IYCF • Present situation of IYCF-Global andNational • Recommended feeding practices in IYCF • Advantage of BF • Disadvantagesof formulafeeding • Composition of colostrum and mature human milk • Barriers of recommended IYCF practices • BFHI 10 steps-special emphasis on mother support group • What is Complementary Feeding (CF)? • Why CF is necessary • Guideline for CF • Video on BF	• What is IYCF • Present situation of IYCF-Global andNational • Recommended feeding practices in IYCF • Advantage of BF • Disadvantagesof formulafeeding • Composition of colostrum and mature human milk • Barriers of recommended IYCF practices • BFHI 10 steps-special emphasis on mother support group • What is Complementary Feeding (CF)? • Why CF is necessary • Guideline for CF **Video on BF** **Video on IYCF** • Composition of food • Frequency • Amount • Density • Who provide help • Responsive feeding • Refusal of food CF andongoing BF • Case study • Domiciliary andinstitutional delivery • EMONC: Emergency Obstetric andNeonatal Care **Family planning** • Concept of family planning • Aims and objectives of family planning • Contraceptive methods • MR andabortion • Eligible andtarget couples, CPR • MCH based family planning **Demography** • Definition of demography • Demographic processes				

• Video on IYCF • Composition of food • Frequency **Family planning** • State the aims and objectives of family planning • List the contraceptive methods with their advantages and disadvantages • Identify the candidates appropriate for different contraceptives • Calculate safe period • Define MR andabortion andstate their indications • Define eligible andtarget couples, **CPR** • Discuss MCH based family planning **Demography** • Define demography • State demographic processes • Discuss demographic stages • Define fertility andmention its influencing factors • Define growth rate andpopulation explosion • Enumerate the factors responsible for high growth rate in Bangladesh • Calculate GR, GFR, TFR,andNRR • Describe population pyramid • Define andclassify census	• Demographic transition andindices • Population pyramid • Census • Fertility andits influencing factors				
School Health Services					
Students will be able to: • state the objectives of school health programme • Describe the aspects/components of school health service • Mention the task of school health medical officer • State health problems of school children • State the school health emergencies • Mention the activities of school health clinic	**CORE** • Objectives of school health service • Aspects/components of school health service • Task of school health medical officer • Health problems of school children • School health emergencies • School health clinic				

Occupational Health					
Students will be able to: • Define occupational health and its objectives • Explain various occupational environments • List the common occupational health hazards • List the locally prevailing common occupationaldiseases with preventive strategies of : Pneumoconiosis, Occupational cancer, Anthrax, Occupational dermatoses • Describe the general measures of health protection in different occupations • Describe the health care facilities andsafety measures for industries • State employees' benefits	**Occupational health and its objectives** • Occupational environment • Occupational health hazards • Principles of prevention of occupational diseases • Employees' benefits				
Health For All (HFA), Primary Health Care(PHC) & MDG					
Students will be able to: • Define PHC and HFA • Explain principles of PHC • List the components of PHC • List the components of ESP • Involve community in identifying priority health problems • Describe the organisational structure in delivery of PHC in Bangladesh • Mention the goal of Health For All (HFA) in the context of Bangladesh • State the national health programmes • Recognise important international health organizations and list their programmes • Describe activities of UHandFWC/Community Clinics those rendering PHC • Describe activities of GP/ Traditional healer in context of PHC • Describe different levels of health care services • State health related MDGs, ESP • State the vision,mission andComponents of	**Definition: HFA and PHC** • Principles andcomponents of PHC • Health related MDG • Components of ESP • Vision, mission and components of existing national health • programmes • Organisational structure for the delivery of PHC • Goal andindicators of HFA by the year of 2000 AD • Levels of health care service delivery • National Health Programmes • Concept,purpose andscope, evolution anddiseases under IHR-2005 • National organizations. • International health organizations: WHO, UNICEF, RED CRESCENT, ICCDRB, CAREetc.				

existing National Health Programmes • State the global indicators of HFA • State the activities of different National Health Programmes • State the purpose and scope,evolution and diseases under International Health Regulations[IHR]-2005 • Discuss the national andinternational health organizations					
Public Health Administration & Management					
Students will be able to: • Define Management andAdministration • State the Functions and Principles of Management and Administration • Define Planning • State the indication of Planning • Describe Planning Process and Planning Cycle • Define Policy, Resource, Needs and Demands, Objective, Target and Goal • Describe the health care delivery s ystem of Bangladesh • Illustrate the organizational structures of health care delivery at different levels • State the health care referral system in Bangladesh • State the charter of duties of different health personnel	• Definition, Functions, Principles of Management and Administration • Definition, Indication and Process of Planning and Planning Cycle • Definition: Policy, Resource, Needs and Demands, Objective, Target andGoal • Health Care Delivery System of Bangladesh • Organizational Structure of Health Care Delivery in • Bangladesh • Health Care Referral System in Bangladesh • Charter of duties of different health personnel				
VAIYAKTIKA SWASTHAVRITTA					
	Dinacharya • Definition of Dinacharya • Aims and importance of dinachary • Brahma Muhurta evam Utthana • Usha Jalapana • Sharirachinta • Malatyaga • Mukha prakshalan • Dantadhavana and preparation of Ayurvedic tooth				

	powder and paste • Jihvanirlekhanavidhi • Anjana • Pratimarsha Nasya • Gandusha and Kavala • Tambulasevana • Dhoomapana • Abhyanga • Udvartana • Utsadana • Vyayama • Chankramana • Snana • Anulepana • Vastra dharana • Danda dharana • Padatra dharana • Chatra dharana • Ushnisha dharana • Ratnabharana dharana • Madhyahna charya • Cosmetic effect of Dinacharya procedures **Rathricharya** • Sandhya charya • Rathri bhojana vidhi • Shayanavidhi according to Bhavamishra **Ritucharya** • Importance of ritucharya • Ritu presentation as per different acharyas • Adana kala & visarga kala • Sanchaya-Prakopa-Prashamana of Dosha according to ritu • Doshashodhana in Ritu Charya • Relation of Agni bala and Ritu • Pathya and Apathya Ahara and Vihara in different ritus				

	Sadvritta: Description of Sadvritta and Achara Rasayana their role in Prevention and control of diseases. • **Ahara:** (Diet) Ahara Nirukti, Swarupa, Pramukhatva, Ahara dravya, Vargikaranam, Aharavidhividhana, Dwadashashana pravicharana, Ashtaharvidhiviseshayatanani, Pathyahara, Apathyahara, Samashana, Adhyashana, Vishamashana, Ahara dushparinama & tajjanya vyadhaya, Santarpanajanya evam Apatarpanajanya vyadhi, Viruddhahara and its effects, Shadrasabhojanasya mahatwam. Dietetic standards, Proximate principles of Food, Nutritional requirements, Sources and deficiency diseases of Protein, Carbohydrate, Fat, Vitamins and Minerals. Concept of balanced diet in Ayurveda, Nitya sevaneeya dravya, Balanced diet for different sections of people in the society, Social aspects of nutrition. Aharavarga - Dhanya varga(Cereals and millets), Shaka and Harita varga (Leafy and Non leafy vegatables), Kanda varga (roots and tubers), Phala varga (Fruits), Taila varga(Fats and Oils), Ikshu varga & Madhya varga(Alcoholic Beverages), Dugdha varga (Milk and Milk products), Masala and vyanjana dravyas (Spices & Condiments), Kritanna varga(Prepared Food), Mamsa varga (Meat types). Food hygiene Milk hygiene-Milk composition, Source of infection (for Milk), Milk borne diseases, Clean and Safe milk, Pasteurization of milk. Meat hygiene-Meat inspection, Slaughter house, Freshness of fish and egg. Fruits and Vegetables hygiene Sanitation of eating places, Preservation of food, Food handlers, Food borne diseases, Food fortification, and Food adulteration, Food toxicants, Properties of Vegetarian and Non-vegetarian diet, Effects of spices and condiments Consumption of Alcohol and its effects on personal and social health. Effects of pathya-				

	apathya in life style disorders-Diabetes, Hypertension, Obesity and Coronary heart Disease • **Nidra**- Nirukti and Utpatti, Types , Nidra – Swasthya sambandha, Properties of Yukta Nidra, Effects of Ratri Jagarana, Diwaswapna, Anidra, Atinidra, Ahara and nVihara causing disturbed sleep , Ahara and Vihara Causing sound sleep. Duration of sleep according to age, Sleep in healthy and diseased persons. • **Brahmacharya** – Brahmacharya and Abrahmacharya, Importance of Bharmacharya and Abrahmacharya, Vyavaya sambandhi niyama, Effects of Ativyavaya. Methods of Virya Raksha, Surataspriha (Libido) through Vajikarana, Viryanasa phala. Roganutpadaniya- Concept of Vega- Adharaniya Vega and Dharaneeya Vega, Diseases due to vegadharana and their chikitsa, sharir shodhan. • **Rasayana for Swastha**-Nirukti, paribhasha(definition), classification and examples • **Ashta nindita purusha** • **Menstrual hygiene**				
	Punctional foods, Nutraceuticals and herbal medicine: Introduction, food science and neutrition, food prossessing and food product development, food biotechnology, food-nutrition- health and diseases, nutraceutical dietary suppliments.				

PRACTICAL

Residential Field Site Training Program

- RFST Coursefor Fourth Year Students is an integral part of the curriculum of Community Medicine.
- Head of the Department of Community Medicine will implement the program as a coordinator.
- Teachers of Community Medicine assisted by UNHFPO will perform the responsibility for successful implementation of the program.
- Health Educator of Community Medicine will organize field level activities of the students.
- All categories of personnel involved in this program will be given remuneration as per WHO rules regulation approved by MOHandFW

Objectives of RFST

Aftercompletion of the Residential Field Site Training Program as future health care providers students will be able to:

- become accustomed with the environment and lifestyle of peoples of rural community.
- identify health needs and problems of the community people and prioretise them
- conductsurvey based on health needs and problems of the community
- be acquainted withhealth care delivery systemat PHC level in Bangladesh.
- develop intersectoral coordination.

Schedule Programme

Daily activities schedule will be designed by the Departmentof Community Medicine

Thana Health Complex

The use of the teaching facilities, access to patient areas and employment of THC staff are all under the control of the Thana Health and Family Planning Officer (TH and FPO), and teachers from medical college must respect his/her authority in these matters.

Apart from the outdoor, ward and laboratory area two rooms are available for teaching sessions. These are the classroom and the Resident Medical Officer's room.

Transport

Twomicrobus having capacity of 25 seats would be engaged for taking students andteachers from the college campus to the Thana Health Complexduring RFST Programme andpreparatory period.

The driver of the micro-bus has a fixed schedule to follow. This is under the control of the Head of Department of Community Medicine.

Accommodation

There are two dormitories both with twenty beds for the students. In each dormitory there are two Single seate drooms with sanitary facilities for teachers.

08 (eight) supporting staff (two drivers, two guards, two cook and two table boy) will be appointed for the conduction of the RFST Programme at Thana Health Complex.

The THFPO will support the programme by engaze in the working doctor's andstaffs.

Games

Arrangement for badminton, caromboards and volleyballs could be made available at the dormitories.

Students may take their own music player or Walkman. But no loud music will be allowed in the dormitories. No music is allowed after 10:00 p.m.

Student supervision

Supervision of the students is the responsibility of the principal, teachers' of Community Medicine And TH & **FPO.**

Community Medicine Teaching Programme
Residential Field Site Training Course

RFST Implementation Schedule

Day 1	Introduction to UHC andbriefing on primary level health care activities andUpazila Health Profile
Day 2 and Day 3	Community health survey
Day 4	MCH andFP Services • Health Education in MCH • Family Planning and • Immunisation
Day 5	Attending the OPDs andInvestigation facilities at upazilla level Attending the emergency department
Day 6	Visit to health related sector working at upazilla level
Day 7	Visit to a local NGO
Day 8	Visit to Community Clinic andUSC
Day 9	Visit to FWC andSattelite clini
Day 10	Evaluation of the programme andpresentation Comments by students, teachers andlocal health authorities

Reference Books

Swasthvritta Samucchya	Pt. Rajeshwardutt Shastri
Preventive & Social Medicine	K Park
Swasthya Vigyan	Dr. Bhaskar Govind Ghanekar
Swasthya Vigyan	Dr. Mukund Swaroop Verma
Ayurvediya Hitopdesa	Vd. Ranjeet Rai Desai
Yoga and Ayurveda	Dr. Ramkumar Jain
Swasthvirtta Vigyan	Dr. Ram Harsh Singh
Swasthvrittama	Dr. Brahmanand Tripathi
Ayurvediya Swasthvritta	Jahulkar
Hathayoga Pradeepika)	Swatmaram Yogendra
Yogic Yoga Paddhati	Bhartiya Prakratika ChikitsaParishada
Yogic Chikitsa	Shri Kedar Nath Gupta
Prakratik Chikitsa Vidhi	Sharda Prasad
Prakritik Chikitsa Vigyan	Verma
Jansanakhya Shiksha Siddhant EvamUpdeysa	Dr. Nirmal Sahani
Health Administration in India	S.C. Seel
Swasthavrittama	Dr. Shiv Kumar Gaur
Health and Family Welfare	T.L. Devraj
Sachitra Yogasan Darshika	Dr- Indra Mohan Jha
Preventive & Social Medicine	J.K. Park
Yogadeepika	Shri Ayyangar
Swasthavritta	Vaidya Sakad
Positive Health	Dr. L.P. Gupta
Biogenic Secrets of Food in Ayurveda	Dr. L.P. Gupa
Yoga & Yogic Chikitsa	Ram Harsh Singh
Smritigranthon mein nihitaSwasthaparaka Samagri	Dr. Smt. Nigam Sharma
The Foundations of Contemporary Yoga	R.H. Singh
Yoga Siddhant Evam Sadhana Dr. Reddy's Comprehensive guide to Swathavritha	Harikrishna Shastri Datar Dr. P.Sudhakar Reddy

Syllabus

of

Rognidan & Anujib Vigyan
(Pathology & Microbiology)

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DEPARTMENTAL OBJECTIVES

Goal:

- The goal of teaching pathology to the undergraduate students is to provide comprehensive knowledge of the cause and mechanism of disease, in order to enable them to achieve complete understanding of the clinical manifestation and natural history of the disease.

Departmental Objectives

After completion of pathology course, undergraduate medical students will be able to:

- Explain basic mechanism of diseases: Etiology, pathogenesis, morphological changes with emphasis on common diseases prevalent in Bangladesh.
- Co-relate between clinical findings and pathological changes.
- Chalk out simple investigation plan for diagnosis and follow up of diseases.
- Interpret laboratory results and understand their implication.
- Demonstrate knowledge about theuse of Histopathology, FNAC, Cytological examination, Pap smear, Frozen section and Immuno-histochemistry
- Develop attitude for further learning ofthe subject.
- Develop skills to perform
- TC,DC, Eosinophil count,estimation of Hb% and ESR
- Semen analysis
- Routine examination of Urine
- Microscopic examination ofbody fluids
- CSF examination
- Writing arequisition form for histo -pathological and cytological examination
- **List of Competencies to acquire** :
- Writing a histo-pathological requisition form
- Preservation ofsurgical specimens in Upozilahealth complexes and district hospitals and preparation offixative for surgical specimens in 10% formalin
- Sending ofsurgical specimens fromUpozilahealth complexes and district hospitals to nearby medicalcollege and larger hospitals where histopathology service is available
- Collection ofPaps'smear/ FNAC from superficial mass lesions
- Preservation ofcyto-pathologicalsmears
- Sending ofcytopathology specimens fromUpozila health complexes and district hospitals to near by medical college and larger hospitals where histopathology and cytopathology service is available
- Preservation ofsurgical specimens for immunohistochemistry and immunoflorescence
- Writing a requisition form for immunohistochemistry or immunoflorescence examination
- Determination ofHb%, ESR, TC & DC of WBC, totalcount of eosinophil, BT and CT, preparation ofstain and comment on PBF.
- Performingroutine urinary examination at health complexes
- Handling and maintenanceof Microscope
- Performingsemen analy sis
- Performingmicroscopic examination of fluid-CSF
- Interpretation of pathology reports and data
- Writing advice for pathological investigations

Rognidan & Anujib Vigyan (Pathology & Microbiology)

Paper – I: Rognidan (Pathology) **Marks – 100: Formative-10, Written-90 (MCQ-20 +SAQ-70)**

Learning Objectives	Contents	Teaching/Learning Strategy	Teaching Aids	Hours/ Days	Assessment
General Pathology					
Introduction to pathology					
Students will be able to • Define pathology and its different branches • Define aetiology, pathogenesisandmorphology	**Core:** • Introduction to different branches of pathology • Definition of aetiology, morphology and pathogenesis	-Lecture -Lecture (Ward) -Clinical case presentation -Self reading & Learning	-OHP -Video tapes, -TV, -VCR, Audio player. -Slide projector -Charts , Flow charts, -Models, Specimens -White board and marker -Chalk board and chalks -Computer and multimedia -Study guide and manuals Seminar	L- 20 hrs	-Written Eam. -Presentation -SEQ -Oral -MCQ -Practical -OSCE -Short case -Long case -At least 100 patients should be examined and treated for various diseases according to principles of treatment of Acharya Charaka - Minimum ten beds in the IPD of the hospital.

Cell injury					
Student will be able to: • Define reversible and irreversible injury. • Identify the causes of cell injury. • Describe the mechanisms of reversible and irreversible injury. • Define cellular swelling and fatty change. • Define necrosis and apoptosis. • Describe types of necrosis and cite examples. • Describe the morphological changes in necrosis and apoptosis. • Describe the mechanism of different types of necrosis including gangrene • Describe clinical effects of tissue necrosi	**Core:** • Cause of cell injury • Reversible and irreversible injury : mechanism • Mechanism of hypoxic injury • Name of free radical ,target of free radical and scavenging system (name of the anti-oxidant), definition of reperfusion injury • Definition of necrosis and apoptosis, types of necrosis and feature with examples **Additional:** • Mechanism of free radical injury and reperfusion injury, apoptosis • Consequences of mitochondrial dysfunction and loss of calcium homeostasis				
Pigments and calcification					
Students will be able to: • Define Hyaline changes, pathological calcification, and Intracellular accumulation.	**Core:** • Pathological calcification- dystrophic and metastatic: Definitions with examples. • Different intracellular pigmentationparticularly their name **Additional:** • Mechanism of calcification				
Acute Inflammation					
Student will be able to : • Define inflammations • Describe the sequence of vascular changes • Define exudates and transudate and their mechanism of formation • Describe the acute inflammatory cells and their functions. • Name the various types of chemical mediators and their role • Describe morphological types of inflammation • Describe the local and general clinical features of acute inflammation • Explain the local and general body response in acute inflammation	**Core:** • Causes and cardinal signs or features of acuteinflammation; • Vascular and cellular events Chemical mediators and their function • Morphological patterns of acute inflammation • Out come of acute inflammation • Local and systemic effect of acute inflammation **Additional:** • Recruitment of leukocytes • Role of complement , coagulation and kinin system • Mechanism of neutrophil recruitment • Recognition of microbes and dead tissue • Defects in leukocyte function • How the chemical mediator works				

• List the hazards and complications of acute inflammation. • Explain the various fates of acute inflammation					
Chronic inflammation:					
Student will be able to: • Define chronic Inflammation • Describe the characteristic features and types of chronic inflammation • Define granuloma • Mentiona etiological classification of granuloma with example • Describe the morphological features of tubercular granuloma • Describe clinical implications of chronic inflammations	**Core:** • Cause • Difference with acute inflammation • Role of macrophage • Examples of granulomatous lesion • Type of granuloma **Additional:**				
Repair and healing					
Student will be able to: • Define healing, repair and regeneration • Describe the mechanisms of primary and secondary wound healing • Distinguish the differences between healing by first and secondary intention • List the local and general factors influencing healing • List the complications of wound healing	**Core:** • Definition of healing, repair and regeneration • Steps of cutaneous wound healing, • Factors influencing wound healing • Complications of wound healing, • Fracture healing • Nerve regeneration **Additional:** • Stem cell • Growth cycle • Extracellular matrix				
Edema and electrolyte disorder					
Student will be able to: • Define oedema and classify oedema • Describe the pathogenesis and mechanism of inflammatory and noninflammatory oedema • Describe various types of clinical oedema a) Cardiac b) Hepatic, c) Renal, d) Pulmonary, e) Nutritional • Explain the clinical significance of oedema	**Core:** • Pathophysiology of oedema • Mechanism ofoedema in cirrhosis, renal disease and heart failure • Examination of body fluidssuch as pleural effusion, ascitic fluid • Electrolyte disorder: causes of metabolic acidosis, metabolic alkalosis, respiratory acidosis&respiratory alkalosis **Additional:**				

Hyperemia, congestion and haemorrhage and Shock					
Student will be able to: • Define hyperaemia, congestionand hemorrhage • Describe different types of hemorrhageand effects of acute and chronic haemorrhage • Explain the mechanism of hyperaemia and congestion • Describe the tissue changes of passive venous congestion of liver and lung. • Define shock • List the different types of shock • Describe the pathophysiology of shock with its various stages.	**Core:** • Definition of hyperaemia, congestion and haemorrhage • Cause of passive Congestion in lung and liver • Shock: type, pathogenesis of septic shock, stages **Additional:** • Morphology of passive congestion in lung and liver • Mechanism of compensation in shock				
Thrombosis and embolism					
Student will be able to: • Define thrombosis and thrombus • Describe the pathogenesis of thrombosis • Describe morphology of thrombus , difference with post mortem clot • List the effects of thrombi, DIC • List the fate of a thrombus	**Core:** • Mechanism of thrombosis, fate of thrombus, • Clinical consequence of venous thrombosis,arterial and cardiac thrombosis • DIC				
Embolism and infarction					
Student will be able to: • Define embolism • List types of emboli • Describe the pathogenesis of pulmonary and systemic embolism and their effects • List the fates of emboli • Define infarct and infarction • Describe the pathogenesis of infarction • List different types and common sties of infarct • Describe morphological changes and fate of an infarct	**Core:** • Definition of embolism • Pulmonary embolism:source and consequence • Systemic thromboembolism: source and consequence • Air embolism, fat embolism, amniotic fluid embolism:source and consequence • Infarct: definition, types, factors influencing the formation of infarct				
Growth disturbance and adaptive change					
Student will be able to: • Define cellular adaptation • List the different types of cellular adaptations	**Core:** • Adaptive change • Definitions and examples of atrophy, metaplasia, hypertrophy,				

• Describe the pathogenesis and morphological features of different types of cellular adaptations	hyperplasia **Additional:** • Mechanism of the adaptive changes				
Neoplasia					
Student will be able to: • Define neoplasia and different tumorlike conditions • Classify tumors • List the characteristic features of benign and malignant tumors • List the characteristic features of carcinoma and sarcoma • Describe the mechanism of spread of malignant tumors • Classify & enlist the different carcinogens. • Describe the parameters required for grading and staging of malignant tumors • Describe the significance of grading and staging • List the precancerous conditions • Explain the difference between invasive carcinoma, carcinoma in situ, locally malignant tumors, latent cancer and dormant cancer. • List clinical effects of neoplasia. • List the various methods in the laboratory for diagnosis of cancer. • Describe briefly principles of histo-pathological examination, cytological examination**,** tumormarkers and immunocyto/ histochemistry.	**Core:** • Definition and characteristics of neoplasia • Nomenclature • Featuresof benign and malignant tumour • Spread of tumour • Genetic predisposition of cancer • Example of proto-oncogene, cancer suppressor gene • Precancerous conditions **Additional:** • Molecular basis of cancer • Multiple stepofcarcinogenesis,				
Carcinogenesis					
Student must be able to • List the major chemical carcinogens, radiant carcinogens and biological carcinogens. • Explain the initiation and promotion of carcinogenesis.	**Core:** • Chemical carcinogen: classification • Tumour: initiation and promotion • Microbiologlogical carcinogen:name and the cancer associated • with them • Name of the radiant energy and the cancer associated with them **Additional:** • Mechanism of the carcinogenesis of the viruses and radiant energy				

	particularly of HPV and EBV and H pylori				
Tumor immunity and clinical aspects of neoplasia and laboratory diagnosis of tumor					
Student will be able to: • Define tumor antigen and immune surveillance • Name the antitumor mechanism • List the local and systemic effect of cancer • Mentionthe basis of grading and staging of tumor • Give an out line of the laboratory diagnosis of cancer	**Core:** • Tumor antigen • Antitumor mechanism • Immune surveillance • Cancer cachexia • Paraneoplastic syndrome • Grading and staging of tumor :basis and their use • Laboratory diagnosis:role of FNAC, cytological examination, • pap smear, frozen section and immunohistochemistry **Additional:** • Mechanism of immune surveillance • Praraneoplastic syndrome • Molecular diagnosis of cancer				
Genetics					
Student will be able to: • Explain the basic concepts of inheritance. • Classify the different genetic disorde	**Core:** • Basicdefinitions, mutation, type, • Classification of genetic disease, • Mendelian disorder:characteristics and examples, • karyotype, features of downsyndrome, turner syndrome and • Klinefelter syndrome and hermaphrodite • Name of the tools for diagnosis of genetic disease **Additional:** • Biochemical and molecular basis of single gene disorder, lysosomal storage disease • Single gene disorder non -classical inheritance • Indications of prenatal diagnosis				
Immunopathology					
Student will be able to: • Describe the basic mechanism of immunological disorders –hypersensitivity, autoimmune disease, immunodeficiency	**Core:** • Name of immune deficiency diseases • Autoimmune diseases: name of the organ specific auto immune diseases and the basic pathogenesis (name of the antibody)				
Infectious Disease					
Student will be able to: • Describe & classify the diseases caused by	**Core:** • Lesions produced by tuberculosis, leprosy and syphilis				

environmental hazards and infectious disease					
Nutritional disorders					
Student will be able to : • Define and briefly describe PEM, Kwashiorkor, Marasmus & vitamin deficiencies with their clinical consequence	**Core:** • Bone changes in deficiency states • Featuresof vitamin A, Vit B12 and folic acid deficiency **Additional:** • Iron metabolism • Vitamin A and D metabolism • Vitamin B12and folic acid deficiency mechanism				
Environmental diseases and hazards					
Student will be able to : • Describe and classify the diseases cost by environmental hazards	**Core:** • Diseases associated with smoking, arsenicosis, radiation hazard				
Systemic Pathology					
Blood vessels					
Student will be able to: • Define arteriosclerosis and atherosclerosis • List the risk factors and discuss the pathogenesis of atherosclerosis • List the sites of involvement of atherosclerosis. • Describe the complications of atherosclerosis	**Core:** • Name of differentvasculitis, and vascular tumor **Core:** • Define arteriosclerosis and atherosclerosis, aneurysm and dissection, • Risk factors of atherosclerosis, site of involvementandcomplications • Lipid profile **Additional:** Pathogenesis of atherosclerosis				
Heart					
• Define ischaemic heart disease and describe the types. • Describe the pathogenesis of ischaemic heart disease. • Describe the morphological features of myocardial infarction. • Describe the haematological and biochemical changes in myocardial infarction. • Define rheumatic heart disease. • Describe the pathogenesis and morphology of rheumatic heart disease. • Define infective endocarditis.	**2. Heart** • Ischemic heart disease and myocardial infarction: pathogenesis, morphological features and biochemical indicators, complications • Rheumatic fever:pathogenesis, morphology and complications • Infective endocarditis: pathogenesis, morphologyandcomplications • Causes of myocarditis, pericarditis **Additional:** • Names ofcongenital heart disease				

• Define the aetiology and types of infective endocarditis. • Define hypertension and list the causes of essential and secondary hypertension. • Discuss the pathogenesis and describe the vascular changes in hypertension.					
Lymphoreticular					
Student will beable to: • List the causes of lymphadenitis and describe the morphological features. • Classify Hodgkin and non-Hodgkin lymphomas. • Describe the morphological features of Hodgkin's and non-Hodgkin lymphoma and correlate with clinical course.	**Core:** • Causes of lymphadenopathy, Outline of classification of NHL • Hodgkin and non-Hodgkin lymphomas: Classification, morphology **Additional:** • Immune diagnosis of Hodgkin lymphoma • Burkitt lymphoma: morphology • Follicular lymphoma:morphology • Causes of splenomegaly				
Hematopathology					
Student will be able to: • Describe main findings in a peripheral blood film. • State the indications of bone marrow examination and describe normal bone marrow findings. • State normal haemoglobin level with age&sexvariations and red cell indices (MCV, MCH , MCHC) • Define and classify anaemia based on morphology and aetiology • List the causes of iron deficiency anaemia and state the laboratory investigations. • List the causes of megaloblastic anaemia and other conditions that leads to macrocytosis. • Describe laboratory investigations for megaloblastic anaemia • Classify haemolytic anaemia. • Describe the findings on peripheral blood film and list further investigations to identify its	**Core:** • Hematopoiesis, different stages of RBC and WBC • Causes of Leukocytosis, leucopenia, eosinophilia, monocytosi sand thrombocytopenia • Anemia: morphological and etiologicalclassification • Lab.diagnosis of nutritional anemia, iron deficiency anemia, megaloblastic anemia, pernicious anemia • Hemolytic anemia:classification • Thalassemia and sickle cell anemia:lab diagnosis • Aplastic anemia:etiology and lab diagnosis • PNH, AIHA, Coombs test • Classification of bleeding disorder • ITP: causesand lab diagnosis • Hemophilia:causesand lab.investigation • Leukemia:classification and lab.diagnosis • CGL • Multiple myeloma: lab. Diagnosis **Additional :** • Constituents of blood and bone marrow • Polycythemia				

aetiology. • List different types of haemoglobino -pathies and thalassaemia • Describe the pathogenesis of sickle cell anaemia and thalassaemia. • List the causes of pancytopenia and describe peripheral blood film findings and bonemarrow findings of aplastic anaemia. • List the causes of haemorrhagic disorders and interpret its screening lists. • Discuss haemophilia and ITP • Define leukaemia, classify leukaemia and describe peripheral blood film and bone marrow findings in different leukaemias. • Explain leukaemoid reactions. • Define polycythemia and classify it. • Define paraproteinaemia and describe the laboratory investigations of multiple myeloma	• Blood Group and blood transfusion • Blood transfusion: grouping and cross matching, transfusion • reaction, blood transmissible disease, Rh incompatibility, Blood products				
Respiratory System					
Student will be able to: • Mention the common inflammatory lung diseases. • Define and describe the different typesof pneumonia, tuberculosis and lung abscess. • List the causes and describe the pathogenesis of pneumonia, tuberculosis and lung abscess. • Describe the morphology and enlist the complication of pneumonia, tuberculosis and lung abscess. • Appreciate the clinical course and correlate it with the morphological features. • Define the different types of chronic obstructive airway diseases. • Describe the pathogenesis, morphological and clinical features of COPD. • Classify lung tumours and describe aetiology and pathogenesis.	**Core:** • Cause of Pulmonary oedema • Define: ARDS, obstructive pulmonarydisease and pneumoconiosis • Morphology of obstructive airway disease • Pathogenesis and morphology of Pneumonia • Lung abscess:pathogenesis and morphology • Pulmonary tuberculosis:pathogenesis, morphology, fate • Cause of pleural effusion • Classification of lung tumor **Additional:** • Congenital anomalies • Pathogenesis of obstructive airway disease, name of the granulomatous lesion of lung • Defense mechanism of lung • Definition of restrictive disease • Morphology and clinical effect of lung tumor				

• Describe the morphological features and clinical course of common lung tumour. • List the causes of pleuritis and describe the various types of pleural effusion					
GIT					
Student will be able to: • Define and list the causes of oral ulcer and leucoplakia • List the precancerous, benign and malignant tumour of the oral cavity and identify the predisposing factors. • Classify histologically benign and malignant tumours of salivary glands. • List the tumours of oesophagus and describe their morphological features. • List the causes of acute and chronic gastritis. • Define peptic ulcer and describe its pathogenesis, morphological features and clinical course. • List the various types of benign and malignant tumours of stomach and identify the predisposing factors for gastric carcinoma. • List the causes of acute appendicitis describe the morphological features and correlate with its clinical course. • Name ulcero inflam matory diseas0es involving intestine. • Differentiate ulcerative colitis from crohn's disease. • List the different types of polyp, benign and malignant tumour of intestine.	**Core:** • Leukoplakia, , name of the carcinoma of oral cavity • Salivary gland tumor, morphology of pleomorphic adenoma • Oesophagus:causes of oesophagitis, Barretts oesophagus • Congenital anomalies of GIT –morphology of Hirschprung • disease and hypertrophic pyloric stenosis • PU:pathogenesis, morphology, complications • Inflammatory bowel syndrome, difference between crohns and ulcerative colitis • Tumors of stomach • Gastric cancer: morphology and etiopathogenesis • Acute appendicitisMorphology • Ca colon:morphology and etiopathogenesis • Name of the different polyp of GIT **Additional:** • Pathogenesis of IBD • Diverticulosis • Infarction • Necrotizing enterocolitis • Ulcerative lesion of GIT				
Hepato biliary system					
Student will be able to: • List the causes of hepatitis. • Describe the various types of viral hepatitis and explain their modes of transmission and state their clinical outcome.	**Core:** • Liver function tests& their interpretation • Jaundice : types, differences • Hepatitis:cause, morphology • Cirrhosis:etiology, pathogenesis,morphologyand complication				

• List the causes and describe the morphological features of liver abscess. • List the causes, pathogenesis and complications of cirrhosis. • Describe the morphology of cirrhosis and correlate it with clinical features. • List the different types of benign and malignant tumours of liver and describe briefly theepidemiology. • Identify the risk factors, describe the pathogenesis, morphological features and complications of Cholelithiasis. • List the tumours of gall bladder	• Portal hypertension and hepatic failure:feature • Liver abscess:morphological features • Tumor of liver :types • Cholecystitis and cholelithiasis : etiology , pathogenesis **Additional:** • Neonatal jaundice • Diseases of exocrine pancreas • HepaticCysts				
Renal system					
Student will be able to: • Classify glomerular diseases. • List clinical manifestations of renal diseases. • Describe briefly aetiology, pathogenesis and clinical course of acute and chronic glomerulonephritis. • Define nephrotic syndrome, list its causes and describe the pathophysiology. • Define pyelonephritis, list the causes, describe the morphological features, and clinical course of acute and chronic pyelonephritis. • Define and list the causes of acute renal failure and discuss briefly its clinical course. • List the different types of renal tumours and discuss briefly the morphological features. • Discuss briefly uropathy and renal calculi. • Describe different types of cystitis. • List the different types of urinary bladder tumour, describe its pathogenesis and morphological features.	**Core:** • Classification of renal disease and their clinical manifestation • Renal function testincluding examination of urine • Immune basis of glomerulonephritis • Classification of glomerulonephritis • Acute post streptococcal glomerulonephritis:etiopathogenesis, morphology, complications • Nephrotic syndrome:definition, causes • Pyelonephritis:etiopathogenesis, morphology and complications • Renal tumour: different types • Renal cell carcinoma • Urinary bladder tumor :different types **Additional:** • Congenital disease of kidney • Polycystic kidney disease • Urolithiasis: Types • Morphology of renal cell carcinoma • Morphology of different types of cystitis				
Male genital system					
Student will be able to: • Describe types and causes of prostatitis.	**Core:** • Prostate: causes of prostatitis				

• Outline epidemiology, pathogenesis and morphological features of nodular hyperplasia. • Describe types of pathology and methods of diagnosis of prostatic carcinoma • List the causes of orchitis and epididymitis. • Classify testicular tumours and describe their morphological features and prognosis.	• Aetiopathogenesis and morphology of nodular hyperplasia • Role of PSAin prostatic carcinoma • Testis • Undescended testis:importance • Inflammatory diseases of testis • Testicular tumor :classification and clinical outcome • Morphology of seminoma, yolk sac tumor and embryonal carcinoma • Tumour markers for testicular tumors • Semen analysis				
Female genital system					
Student will be able to: • List the causes of cervicitis and discuss briefly non - neoplastic lesions of cervix. • Identify the risk factor for cervical carcinoma, discuss briefly the precancerous, and cancerous lesions of cervix and methods of diagnosis. • List the causes of endometriosis and discuss briefly neoplastic and nonneoplastic lesions of uterus. • List the non-neoplastic cysts of ovary. • Describe ovarian tumours and describe briefly morphological features and clinical course of common tumour. • List the gestational trophoblastic tumours, name the type of hydatidiform mole, describe the morphological features and methods of diagnosis of hydatidiform mole. • Identify the predisposing factors and discuss the morphological changes and prognosis of Choriocarcinoma.	**Core:** • Causes of cervicitis, salpingitis • Risk factors of cervical cancer • Role of human papilloma virus –screening for cervical cancer • Different histological types of cervical cancer • Endometriosis :possible mechanism , sites and effect of endometriosis • Common tumor of the corpus of uterus :morphology of leiomyoma, • Endometrial hyperplasia :different types, their morphology and importance • Classification of ovarian tumor and role of tumor marker • Morphology of teratoma, dysgerminoma, choriocarcinoma and the different surface epithelial tumor, Krukenberg tumor • Hydatidiform mole and choriocarcinoma predisposing factors, morphology and diagnosis • Pregnancy test				
Breast					
Students will be able to: • List the inflammatory diseases of breast. • Describe the epidemiology, types and biological importance of fibrocystic disease. • List the benign and malignant tumours of breast,	**Core:** • Name of the different inflammatory diseasesof breast, cause of lump of breast • Fibrocystic disease: different types and their importance • Classification of breast tumor				

classify malignant breast tumour and discuss the risk factors.	• Breast carcinoma:risk factors and the prognostic factors • Screening of breast carcinoma				
Endocrine system—thyroid and endocrine pancreas diabetis mellitus					
Students will be able to: • List the causes of thyroiditis and describe briefly Hashimotos thyroiditis. • Discuss pathogenesis and clinical course of diffuse and multinodular goitre. • Describe the morphological features of goitre. • List the benign and malignant tumorsof thyroid. • Describe the morphological features of papillary, follicular carcinoma and the prognosis of thyroid tumors. • Types of diabetes mellitus, pathogenesis, diagnosis and complications	**Core:** • Causes of goiter, name of the different auto immune disease of • thyroid • Thyroiditis: types and morphology • Different types of thyroid tumor, their morphology and prognosis • Diabetes mellitus :differenttypes, pathogenesis, and complications • Estimation of blood sugar • Glucose tolerance test and its interpretation **Additional:** Mechanism of ketoacidosis				
Skin					
Student will be able to: • Define the terms used in dermatology • List common p apulo-squamous and visicobullous diseases of skin. • List the benign, premalignant and malignant epidermal tumors • Describe briefly the morphological features of squamous cell carcinoma, basal cell carcinoma, malignant melanoma	**Core:** • Termsused in dermatology • Cause of bullous lesions • Name of premalignant and malignant lesions of skin • Basal cell carcinoma, malignant melanoma and squamous cell carcinoma: morphology				
CNS					
Student will be able to: • List the course of acute and chronic meningitis and encephalitis and describe CSF findings in different types of meningitis. • List the benign and malignant tumorsof central nervous system and peripheral nerve sheath.	**Core:** • Indications of Examination of CSF and the findings in different typesof meningitis • Name of the CNS tumor **Additional:** • Changes in cerebral infarction				
Bone, soft tissue, eye and ENT					
Student will be able to: • List the tumorsof eye • List the tumorsof Nasal Cavity	**Core:** • Soft tissue tumor: names • Bone tumor : names and their histogenesis	Total teaching hour			

• Classify the tumorsof soft tissue • Describe the pathogenesis of sinusitis/ otitis media • Classify tumorsof bone • Describe causes & pathogenesis of osteomyelitis • List the disease skeletal muscle	• Osteomyelitis: aetiopathogenesis, morphology • Name of the tumors of eye and nasal cavity. **Additional:** • Morphology of retinoblastoma, giant cell tumor of bone, Ewings Sarcoma.	insystemic pathology; Lecture 65x1 = 65 hour Tutorial 37 x2 = 74 hour Practical 13 x1= 13 hour Total = 152			
Dosha Dushyadi Vigyana					
	• Definition and importance of Roganidana. • Samanya Nidana and Samanya Lakshana of Dosha Vriddhi, Kshaya and Prakopa. • Dosha Dhatu Ashraya Ashrayi Bhava. • Dhatu Kshaya Vriddhi Lakshana. • Mala Kshaya Vriddhi Lakshana. • Hetu, Bheda and Lakshana of Agni Dushti. • Definitions and Samanya Lakshana of Ama. • Sama and nirama Dosha, Dushya Lakshana. • Dosha Paka and Dhatu Paka Lakshana. • Concept, classification, diagnosis and general complications of Avarana. • Doshagati and Rogmarga. • Detailed study of Srotomoola and Srotodushti Samanya and Vishishta Hetu Lakshana of all Srotas. Differences between Sroto Dushti and Kha Vaigunya				
VyadhiVigyana					
	• Definition, synonyms and classification of Vyadhi & Vyadhi Ghatak. • Criteria for nomenclature of Diseases in Ayurveda (Vyadhinamakarana). • Bija, Bija Bhaga and Bija Bhaga Avayava Dushti. • Basic knowledge of Hereditary, Congenital, Acquired, Multifactorial, Traumatic and Environmental disorders. • Introduction to ICD Classification of Diseases of WHO and DSM classification.				

	• Samanyaja and NanatmajaVikara. NidanarthakaraVyadhi, Hetu Sankara, Lingasankara, • Vyadhisankara, Vyadhi Awastha. • Dhatu, Updhatu, Mala and Indriya Pradoshaj Vikara. • Concept of Ashta Mahagada. • Introduction to Ashta Nindita. • Definition and classification of Vyadhikshamatva. • Ojas – types of Ojo Dushti- Visrimsa- Vyapad & Kshaya & It's Diseases.				
Nidana Panchaka Vigyana					
	• Difference between Roga and Rogi Pariksha. • Importance of Nidan Panchaka. • Hetu - Definition, Synonyms and Classification. • Purva Rupa–Definition, Synonyms, Samanya and Vishishta Purvarupa. • Rupa-Definition, Synonyms, Samanya and Pratyatma Lakshana. Difference between • Vyadhi and Lakshana. • Upashaya/Anupashaya– Definition, Types and its importance in diagnosis. • Samprapti–Definition, Synonyms and Type and Samprapti Ghataka. • Shat Kriyakaala. Relationship between Nidana Panchaka and Shat Kriyakaala. • Upadrava and Udarka. • ArishtaVigyan – Definition, Types and its importance. • Sadhyasadhyatwa – Types, their parameters and importance. • General diagnostic principles of AnuktaVyadhi (Ch. Vi. 4).				
Pariksha Vigyana					
	• Importance and knowledge of Aptopadeshadi & Darshanadi Trividha, Chaturvidha, and • Shadvidha Pariksha. • Importance and Knowledge of Ashtasthana Pariksha. • Importance and Knowledge of Karanadi Dashavidha Parikshya Bhava. • Importance and Knowledge of Dashavidha Pariksha.				

PRACTICAL

SL No	Name of Item	Full Marks	Marks Scored	Signature Remarks
General Pathology				
1	Introduction and preservation and transportation of specimen and Tissue processing			
2	Reversible cell injury			
3	Irreversible cell injury			
4	Pigment and Calcification			
5	Acute inflammation (1)			
6	Acute inflammation (2)			
7	Chronic inflammation			
8	Repair and Healing			
9	Edema and electrolyte disorder (1)			
10	Edema and electrolyte disorder (2)			
11	Hyperemia, congestion, hemorrhage and shock			
12	Thrombosis			
13	Embolism and infarction			
14	Growth disturbance and adaptive change			
15	Neoplasia (1)			
16	Neoplasia (2)			
17	Carcinogenesis			
18	Tumor immunity,clinical aspect of neoplasia and laboratory diagnosis of tumor			
19	Outline of genetics			
20	Immunopathology			
21	Infectious disease			
22	Nutritional disorders and childhood tumor			
Systemic Pathology				
23	Blood vessels –vasculitis, tumors and atherosclerosis, lipid profile			
24	Ischemic heart disease and hypertensive heart disease, cardiac enzymes			
25	Rheumatic heart disease, infective endocarditis,			
26	Myocarditis, pericarditis, cardiomyopathy and other			
27	Lymph Node—Lymphadenitis, Lymphoma			
28	Hematolymphoid i. Constituents of blood and bone marrow, hematopoiesis, developmental stages of RBC and WBC, causes of leukocytosis, eosinophilia, lymphocytosis, iron metabolism, RBC indices , PBF, DC, TC			
29	Hematolymphoid ii, RBC Anemia, classification, iron deficiency, folic acid and Vitamin B 12, deficiency anaemia			
30	Hematolymphoid iii, Hemolytic anemia			
31	Hematolymphoid iv. Thallassemia and aplastic anemia			
32	Hematolymphoid Bleeding disorder (a)			
33	Hematolymphoid Leukemia (a)			
34	Hematolymphoid --Practical Hb estimation , ESR			
35	Hematolymphoid ---Practical DC, TC and other			
36	Blood grouping			
37	Respiratory system–Congenital anomalies, inflammatory disease,			
38	Respiratory system –Obstructive air way disease ,			
39	Respiratory system–lung tumor and other diseases, pleural effusion			
40	Urinary system (i) renal function test, clinical presentation of renal disease, congenital disease			
41	Urinary system (i) Glomerular diseases			
42	Urinary system (ii)Tubular disease			
43	Urinary system ((iii) Renal tumors			
44	Urinary system –Examination of urine			

45	Diseases of urinary bladder			
46	GIT –Oral cavity, salivarygland, esophagus and peptic ulcer			
47	GIT – polyps of GIT andgastric carcinoma			
48	GIT –small intestine			
49	GIT –large gut			
50	Hepatobiliary –acute and chronic hepatitis, liver function test			
51	Hepato-biliary—Cirrhosis, portal hypertension, hepatic failure,			
52	Hepato-biliary—tumor			
53	Gall bladder			
54	MGS—testis, semen analysis			
55	MGS –Prostate			
56	FGS –cervix, ovary			
57	FGS –Corpusof uterusand placenta			
58	Breast—inflammatory and fibrocystic diseases			
59	Breast—benign and malignant tumor			
60	Endocrine –thyroid			
61	Endocrine –Diabetes mellitus			
62	Endocrine –Diabetes mellitus, GTT,			
63	GTT, Benedicts test			
64	Skin and CNS			
65	Bones and soft tissue—tumor, osteomyelitis			
66	Eye & ENT—tumor, sinusitis, otitis media			
67	An out line of autopsy			
68	Techniques in histopathology –gross examination			
69	Techniques in histopathology –FNAC, Pap smear			
70	Tissue processing			
71	Miscellaneous			

Reference Books

Name of the Book	Name of the Author
Madhav Nidan (Madhukosha commentary) Part 1 – 2	Pt. Yadunandan Upadhyay
Basic pathology	Kumar Cotran Robins.
Pathology Solution	Dr. Nahiduzzaman
Pathology & Microbiology	Dr. Ijondranath Saha
Practical Pathology	Kazi Khaleq
General pathology	Walters and Isresl
Medical Microbiology and Immunology	Churehill livingstone.
A hand book on clinical Pathology	Md. Atiqur Rahman
Pt. Yadunandan Upadhyay	Kaviraj Gananath Sen
Doshakaranatwa Mimamsa	Acharya P.V. Sharma
Nadi Darshan	Vd. Tara Shankar Mishra
Nadi Vigyanam	Vidyotini Hindi Tika
Nadi Vigyan	Shri Satya Dev Vashisht
Nadi Vigyan	Gangadhar Tika
Rogi Pariksha vidhi	Acharya Priyavrata Sharma
Ayurvediya Rog Vargikaran	Vd. Ramanath Dwivedi & Vd. Gurdip Singh
Ayurvediya Nidan Evam Chikitsa KeSiddhanta	Prof. Ram Harsh Singh
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Parameswarappa's Ayurvediya VikritiVigyan and Roga Vikriti Vigyan	Dr. P.S. Byadgi.
Oxford Handbook of Clinical Examination and Practical Skills	Oxford Handbooks
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Robbins Basic Pathology	Kumar, Abbas, Fausto at al

Microbiology

Departmental Objectives:

Undergraduate medical students after completing the course on Microbiology will become well versed inthe etiology of microbial diseases, their pathogenesis, immunological responses involved and some important clinical features that would enable them to plan and interpret necessary laboratory investigations for diagnosis, treatment and prevention. The department will provide teaching-learning experiences to achieve the following learning objectives.

KNOWLEDGE:

At the end of the course, students will be able to:

- Describe and understand the aetiopathogenesis of microbial agents such as bacteria, virus, parasite and fungi commonly prevalent in Bangladesh.
- Explain the host-parasite relationship, normal flora of the body, pathogens and opportunistic pathogens.
- Understand the principles and applications of immunology involved in the pathogenesis, diagnosis and prevention of microbial and immunological diseases.
- Understand hospital acquired infection and its prevention
  Uunderstand the emerging andre-emerging microbial diseases in Bangladesh andtheir diagnosis, control andprevention
- Understand antibiotic resistant pattern andselection of appropriate antibiotics andits rational use.

SKILL:

Students will be able to:

- Plan necessary laboratory investigations selecting appropriate clinical samples attheright time , using the right method of their collection and interpret the results of these laboratory investigations to arrive at laboratory diagnosis of microbial and immunological diseases.
- Perform simple laboratory tests available in Upazila Health Complex.
- Carry out the techniques of asepsis, antisepsis and sterilization in day to day procedures.
- Undertake universal precautions in laboratory and clinical practices.

ATTITUDE:

Students will be able to:

- Demonstrate the attitude for further learning, research and continuing education for improvement of efficiency and skill in the subject.
- List of Competencies to acquire: After completion of graduation, anMBBS doctor is expected to achieve the following competency in the area of Microbiology. An MBBS graduate will be competent to:
  - Perceive the etio-pathogenesis of diseases caused by microbes commonly prevalent in Bangladesh
  - Proceed for diagnosing a case caused by microbes in terms of :
    - ppropriate specimens necessary for diagnosis
    - timing of specimen collection and appropriate transport
    - appropriate diagnostic tests to advise
  - Interpretthe values of tests and the test results.
  - Identify the basic problems of hospital acquired infection and its prevention
  - Select appropriate antimicrobial agents for the treatment of common microbial diseases.

- Use of antibiotics rationally
- Provide Counseling regarding vaccination against common diseases and chemoprophylaxis
- Appraise the need for research on common microbial diseases encountered in medical practice

Note: Microbial diseases include: bacteria, parasites, virusesand fungi

Rognidan & Anujib Vigyan (Pathology & Microbiology)

Paper – II: Anujib Vigyan (Microbiology) **Marks – 100: Formative-10, Written-90 (MCQ-20 +SAQ-70)**

Learning Objectives	Contents	Teaching/Learning Strategy	Teaching Aids	Hours/ Days	Assessment
General Bacteriology					
Students will be able to : • Describe historical background andoutline the scope and importance of Microbiology in medical science. • Describe the prokaryotic and eukaryotic cells. • Describe different structures of bacterial cell and their functions. • Classify bacteria based on staining andmorphology ▪ Explain the theoretical basis of staining andclinical significance of certain staining including Gram and Z-N staining • Describe the general requirements of microbial growth • Classify bacteriological media and describe their uses • Define sterilization, disinfection andantisepsis • Describe certain methods of sterilization and disinfection, and outline their application • Select appropriate method of sterilizationin their clinical practice. • Explain the mechanism of action of certain anti-microbial agents ▪ Select appropriate antimicrobial agents	**CORE:** **Introduction of Microbiology:** • Brief historical background • Branches of Microbiology • Concept of medical biotechnology in relation to Microbiology • Importanceand scope of microbiology in medical science. **Bacterial cell:** • Prokaryotic and Eukaryotic cells with examples • Different structures of bacterial cell and their functions. • Brief description of cell wall of Gram positive and Gram negative bacteria. • Spores structure and clinical importance. • L-forms, protoplast, spheroplast **Bacterial classification andstaining:** • Nomenclature • Classification by staining andmorphology. • Staining-Theoretical basis andclinical significance of Gram and Z-N • Practical on staining: Gram, Z-N staining **Nutrition and Cultivation of bacteria:** • Nutritional requirement for the growth • Growth curve: phases with clinical significance • Common bacteriological media: classification and uses. **Sterilization and Disinfection:** • Definition, classification andapplications of sterilization, • disinfection andantisepsis • Methods of sterilizations: details of autoclaving, hot air oven and chemical methods.	-Lecture -Lecture (Ward) -Clinical case presentation -Self reading & Learning	-OHP -Video tapes, -TV, -VCR, Audio player. -Slide projector -Charts , Flow charts, -Models, Specimens -White board and marker -Chalk board and chalks -Computer and multimedia -Study guide and manuals Seminar	L- 20 hrs	-Written Eam. -Presentation -SEQ -Oral -MCQ -Practical -OSCE -Short case -Long case -At least 100 patients should be examined and treated for various diseases according to principles of treatment of Acharya Charaka - Minimum ten beds in the IPD of the hospital.

	• Sterilization of medical equipments: Critical. Semi-critical and non-critical devices • Disinfection body fluid spillage **Antimicrobial agents:** • Definition of antibiotics, antimicrobial agents, bacteriostatic, bacteriocidal, synergism, antagonism, selective toxicity etc. • Mechanism of action on bacteria with examples • Drug resistance: origin, mechanism, transmission and prevention • Indication of combination of antibiotics in bacterial infection • Hazards of indiscriminate use of antibiotics				
Systemic Bacteriology					
• Describe the different aspects of host-parasite relationship differentiate between normal, opportunistic andpathogenic bacteria andexplain their clinical importance. • Enumerate the virulence factors and explain their role in pathogenesis • Enumerate the common bacterial agents in Bangladesh: describe epidemiology, their morphology, classification and important cultural characteristics. • Mention their virulence factors and describe pathogenesis and brief clinical features. • Describe the laboratory diagnosis: selection, collection, transportation and preservation of clinical samples, laboratory tests andtheir interpretation	**CORE:** **Host-Parasite relationship:** • Terms andDefinitions. • Parasite andHost attributes • Normal flora, opportunistic pathogens andtheir clinical importance. **Pathogenesis of bacterial diseases:** • Transmission of bacterial agents. • Koch's Postulates • Virulence factors e.g. toxins, enzymes, invasiveness and their role in pathogenesis of diseases with some examples **Staphylococci: S. aureus, S. epidermidis,S. saprophyticus.** • Streptococci : Gr A and Streptococcus pneumoniae • Neissreia: N. gonorrhoea, N. meningitides • Corynebacterium diphtheriae • Enterobacteriaceae: Classification, Salmonella, Shigella, and Esch. coli, Vibrio cholera, Helicobacter pylori • Mycobacterium: M. tuberculosis, Atypical mycrobacteria and M. leprae. • Anaerobic bacteria: Clostridium: Cl. tetani, Cl. botulinum, Cl. perfringens • Spirochaetes: Treponemma palladium • Important characteristics and diseases produced by:				

	Rickettssia Haemophilus Influenza, Haemophilus ducrey, Mycoplasma, Chlamydia, Nocardia, Actinomycetes species **Additional:** • Strpt. Group B, D • Klebsiella, Proteus , Pseudomonas: Ps. aeruginosa , Aeromonas, Plesiomonas, Campylobacterjejuni • Bacteroides species • Clostridium deficille • Listeria				
Immunology					
Students will be able to: • Explain the importance of history and role of immunology in modern medicine • Describe the basic components of immune system • Explain the normal defense mechanism • Mention the disorders of the immune system • Explain the immunological principles involved in different diagnostic tests	**CORE:** **1. Introduction:** • Brief historical background • Basic concepts of immunity: type's andcomponents with examples. **2. Immune system:** • Organs, cells and soluble components **3. Antigens and Immunogens:** • Terms and definitions, criteria of immunogenicity, hapten, epitopes and their clinical significance. **4. Major histocompatibility complex (MHC/ HLA):** • Terms and definitions, types and distribution, clinical and biological significance. **5. Immunoglobulins and Antibodies:** • Terms and definitions, classification, structure, biological properties and functions. **6. Complements:** • Terms and definitions, activation, biological functions and clinical significance. **7. Mechanisms of immune response :** • Antibody and cell mediated immune response. • Primary and secondary immune response **8. Hypersensitivity:** • Terms and definitions, classifications, mechanisms, clinical significance with examples**.** **9. Transplantation and Tumour immunity:** • Terms and definitions, types andoutline of prevention of				

	graft rejection. • Tumour antigens, role in diagnosis and clinical significance**.** **10. Autoimmunity:** • Terms and definitions, basic concepts **11. Immunodeficiency disorders and immunotherapy:** • Classification with examples **12. Agents of immunotherapy** **13. Immunodiagnostic tests** • Terms and definitions, types and applications in diagnostic medicine.				
Parasitology					
Students will be able to: • Mention the important characteristics and epidemiology of common parasitic diseases • Describe pathogenesis • List major complications and laboratory diagnosis of common parasites in Bangladesh	**CORE:** **Introduction:** Introduction to parasitology, common parasitic diseases of Bangladesh, Terms and definitions, classifications of parasites according to habitate, **Intestinal, luminal and free living protozoa:** **Entamoeba histolytica:** • Classification • Geographical distribution, morphology, disease, clinical features, pathogenesis, laboratory diagnosis **Giardia intestinalis and Trichomonas vaginalis:** • Morphology, transmission, disease, clinical features, pathogenesis, laboratory diagnosis **Blood and Tissue Protozoa:** **Leishmania species:** **Leishmania donovani and PKDL:** • Geographical distribution morphology, lifecycle, disease, clinical features, pathogenesis, laboratory diagnosis **Plasmodium species:** • Epidemiology, morphology, lifecycle, disease, clinical features, pathogenesis, complications, laboratory diagnosis, **Cestode sand Trematodes:** • Classify according to habitate with examples • Morphology, lifecycle, diseases, clinical features, pathogenesis, laboratory diagnosis of Taenia saginataand Taenia solium:				

	Echinococcus granulosus: • Morphology, lifecycle, disease, clinical features, pathogenesis and laboratory diagnosis **Intestinal Nematodes:** • Geographical distribution, morphology, lifecycle, disease, clinical features, pathogenesis, laboratory diagnosis of Ascaris lumbricoides, Hook worm, Trichuris trichiura, Enterobious vermicularis, Strongyloides stercoralisand larva migrans **Tissue nematodes:** **Wuchareria bancrofti:** • Morphology, lifecycle, disease (classical andoccult filariasis, tropical pulmonary eosinophilia), clinical features, pathogenesis, complications, laboratory diagnosis **Additional: Important characteristics anddisease produced by:** • Acanthemoeba and Negleria • Toxoplasmagondii, Crytosporidium, Balantidium coli • Hymenolepes nana, Diphylobothrium latum • Trypanosoma • Loa loa, Onchosercous volvulous • Fasiolopsis buski, Faciola hepatica: habitate, disease, clinical features, laboratory diagnosis				
Virology					
Students will be able to: • Differentiate the basic structure of virus from bacteria. • Mention epidemiology, diseases, important clinical features, pathogenesis andlaboratory diagnosis of common viral diseases • Identify the appropriate measures for prevention.	**CORE:** 1. **General virology:** • Introduction to virology, common viral diseases in Bangladesh. • Basic structure of virus • Outline of viral replication • Classification • Antiviral agents 2. **Herpes viruses**: • Classification, important characteristics, diseases, important clinical features, transmission, pathogenesis, complications, laboratory diagnosis andprevention 3. **Orthomyxo andparamyxo viruses** • Important characteristics, diseases, important clinical				

	features, transmission, pathogenesis, complications, laboratory diagnosis and prevention 4. **Hepatitis viruses:** • Classification, important characteristics, diseases, transmission, pathogenesis, complications, laboratory diagnosis and prevention 5. **Polio virus:** • Important characteristics, diseases, transmission, pathogenesis, laboratory diagnosis and prevention • Merits and demerits of oral and injectable polio vaccine 6. **Rabies virus:** • Important characteristics, diseases, transmission, pathogenesis, laboratory diagnosis and prevention, merits anddemerits of different types of vaccines 7. **Rota virus:** • Diseases, transmission, pathogenesis, laboratory diagnosis and prevention 8. **HIV:** • Classification, important characteristics, diseases (AIDS), transmission, pathogenesis, laboratory diagnosis and prevention 9. **Dengue:** • Important characteristics, diseases (DHF, DSS), transmission, pathogenesis, laboratory diagnosis and prevention 10. **Emerging viral diseases:** Avian flue, SARS, Nipah, Swine flue, etc. • Important characteristics of virus, important clinical features, transmission, pathogenesis, laboratory diagnosis andprevention 11. **Oncogenic virus:** • Definitions, list of onchogenic viruses with their associated tumours.				

Mycology					
Students will be able to: • Describe morphology, medically important fungal agents andthe diseases caused by them • Describe pathogenesis, important clinical features andlaboratory diagnosis of superficial, cutaneous, subcutaneous and systemic mycosis	**CORE:** **1. Introduction:** • Introduction to Mycology, beneficial and detrimental effects, morphology, classification • Difference between fungal andbacterial spores **2. Superficial and cutaneous mycoses:** • Aetiological agents anddiseases • Transmission andpathogenesis, laboratory diagnosis of Pityriasis versicolor, Dermatophytosis, Candidiasis. **3. Subcutaneous** • Aetiological agents anddiseases • Transmission andpathogenesis • Laboratory diagnosis of Rhinosporiodiasis andMadura foot **4. Systemic mycoses(Primary and opportunistic):** • Aetiological agents anddiseases • Transmission andpathogenesis • Laboratory diagnosis of histoplasmosis, cryptococcal meningitis, candidiasis • Brief description of pneumocystis jerovici, fungus ball, mycotoxin				
Clinical Microbiology					
Student will be able to: • Know organisms causing diseases, plan and • Select appropriate investigation for diagnosis • Interpret the findings of the investigations • Design appropriate steps for antimicrobial therapy and prevention	**CORE:** • Collection of samples, transportation and storage • Microbial diseases of Gastrointestinal and Hepatobiliary diseases and Food poisoning • Microbial diseases of Genito-Urinary system • Microbial diseases of upper and lower Respiratory Tract infections • Microbial diseases of CNS infection • Hospital Acquired Infections • Microbial diseases of Bone and Soft Tissue infection • Microbial diseases of Cardiovascular System • Microbial diseases of eye, ear, nose and throat • Pyrexia of unknown origin (Microbial causewith emphasis on blood culture).				

PRACTICAL

1. Gram's staining
2. Z-Nstaining
3. Demonstration of culture media namely Nutrient agar, Blood agar, Chocolate agar, MacConkey's agar, Lowenstein Jensen, Robertson's cookedmeat media, Blood culture media, transport media (Carry-Blair/Stuart/Peptone water)with and without bacterial growth
4. Demonstration of colony morphology of common bacteria: Staphylococci, Streptococcus Lactose fermenters, Lactose nonfermenters, Proteus, Pseudomonas.
5. Demonstration of inoculation, incubation (aerobic, CO2 and Anerobic condition) andplate reading.
6. Demonstration of catalase, coagulase, and oxidase, TSI, MIU and Simmon's citrate tests
7. Demonstration of in vitro antibiotic sensitivity test by disk diffusion method,
8. Demonstration of sterilization by chemical agents autoclavingand hot air oven.

Demonstration

1. Microscopic examination of stool for demonstration of cyst/trophozoites of protozoa, ova/larva of intestinal helminthes, pus cells, macrophage andRBC.
2. Microscopic examination of urine for demonstration of epithelial cells, pus cells, RBC, etc.
3. Examination of blood smear for demonstration of malarial parasites
4. Examination of bone marrow smear for LD body
5. Microscopic examination of Gram stain smear of throat swab, wound swab, urethral discharge.
6. Microspic examination of Z-N smear of sputum for AFB
7. Immunological tests: Demonstration andinterpretation of Widal, RPR, ICT for HBsAg, Dengue and Plasmodium
8. Microscopic examination of skin scrapping for demonstration of fungal elements (dermatophytes and candida)

Reference Books

Name of the Book	Name of the Author
Medical Microbiology and Immunology	Churehill livingstone.
Rogi Pariksha vidhi	Acharya Priyavrata Sharma
Ayurvediya Rog Vargikaran	Vd. Ramanath Dwivedi & Vd. Gurdip Singh
Ayurvediya Nidan Evam Chikitsa KeSiddhanta	Prof. Ram Harsh Singh
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