REGULATIONS AND CURRICULUM GOVERNING

M.Sc. PHYSICIAN ASSOCIATE PROGRAM

Implemented in Academic Year 2022-23

Name of the Constituent Unit: Yenepoya School of Allied Health Sciences



Deralakatte, Mangalore, Karnataka.

NOTIFICATION FROM THE UNIVERSITY

Sl. No.	ACM with date	Decisions/Approvals
1.	47th ACM/ 20.06.2022	Starting M.Sc. Physician Associate program under the Faculty of Allied and Healthcare Professions, and approval of the Curriculum & Regulations.
2.	51st ACM/ 16.05.2023	Approval of CBCS regulations: Form CIA 40% and SEE 60% to CIA 50% and SEE 50%. Minimum pass marks for CIA shall be 50% and SEE shall be 50%
3.	58- ACM/ 13.08.2024	Approved the amendment of the dissertation credit distribution from 6 credits to 12 credits.
4.	63rd - ACM/11/2025,16.06.2025	Approved the amendment on Structured continuous internal assessment components of PG dissertation

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1. Preamble

Health care sector has become one of the largest employment-generating sectors in India and abroad. The rapidly changing and expanding healthcare sector demands formal training programs in all its allied areas. Advanced complex instrumentation & equipment require technologists not only to operate but also to care for & maintain these instruments and equipment. These technologists should possess a strong scientific foundation to be able to perform these tasks at a much higher level than the traditionally trained technicians of the past used to perform. The students who are trained in the technological aspects of medical care with a good scientific foundation will be in a position to competently assist the Physician or Surgeon. Hence to prepare the students to meet the demands of healthcare sector& in accordance with the Ministry of Human Resource Development (HRD), Govt. of India, education system, choice-based credit systemis adopted.

PAs (Physician Associates/Physician Assistants) are medical professionals who diagnose illness, develop and manage treatment plans, prescribe medications, and often serve as a patient's principal healthcare provider. With thousands of hours of medical training, PAs are versatile and collaborative. Physician Associates work in all areas of medicine, including primary care and family medicine, emergency medicine, and psychiatry. Physician Associates, also known as PAs, practice medicine on teams with physicians, surgeons, and other healthcare workers. They examine, diagnose, and treat patients. They work with patients of all ages in virtually all specialty and primary care areas, diagnosing and treating common illnesses and working with minor procedures

2. Definitions

2.1. Academic Year:

Two consecutive (one odd + one even) semesters constitute one academic year.

2.2. Choice-Based Credit System:

The CBCS provides a choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).

2.3.Course:

Usually referred to as ‘papers‟ is a component of a program. The courses shall define learning objectives and learning outcomes. A course shall comprise lectures/tutorials/laboratory work/fieldwork/outreach activities/project work/vocational training/viva/seminars/term papers/assignments/presentations/self-study. combination of some of these.

2.4. Credits:

Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/tutorial laboratory work and other forms of learning required, to complete the course contents minimum of 15-week schedule: One credit=1hour of lecture per week/two hours of Laboratory or practical/three hours of clinical rotation, field work/posting. All courses need not carry the same credits.

2.5. Programs:

An educational program leading to the award of a degree, diploma or certificate.

2.6. Grade Point:

It is a numerical weight allotted to each letter grade on a 10-point scale.

2.7. Credit Point:

It is the product of grade point and number of credits for a course.

2.8. Cumulative Grade Point Average (CGPA):

It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.

2.9. Letter Grade:

It is an index of the performance of students in a said course. Grades are denoted by letters: O+, O, A+, A, B+, P, F.

2.10. Semester Grade Point Average (SGPA):

It is a measure of performance of work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.

2.11. Transcript or Grade Card or Certificate:

Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (code, title, number of credits, grade secured) along with SGPA of that semester.

Type of Courses

2.12 Core course: a course that should compulsorily be studied by a candidate as a core requirement is termed as a core course. This is the core requirement to complete the M.Sc. Physician Associate program.

2.13 Skill Enhancement Course: These courses are aimed at improving practical, professional & procedural knowledge requirement for carrying the highly skilled task related to the field of study.

2.14 Multidisciplinary Elective: Generally, a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/subject of study or which provides an extended scope or which enables an exposure to some other discipline or subject or domain or nurtures the candidate's proficiency skill.

A candidate shall have the freedom to choose Multidisciplinary Elective courses during the academic duration of the particular PG Program offered by Yenepoya (deemed to be) University through the PG departments or SWAYAM/MOOC external online

platforms or a mix of courses offered by Yenepoya (deemed to be) University and SWAYAM/MOOC as appropriate.

i. A candidate opting for SWAYAM/MOOC courses shall have the freedom to choose the courses of once own choice and complete such courses before appearing fourth Semester End Examination.
ii. A candidate shall compulsorily submit the pass certificate of each course successfully completed to the controller of examination of Yenepoya (deemed to be) University through the proper channel before appearing the fourth semester end examination.
iii. A candidate opting multidisciplinary elective courses offered by the Yenepoya (deemed to be) University through the PG departments need to take up these courses generally during second and third semesters of the program.
iv. A candidate shall not take the courses offered by the department in which she/he is enrolled.
v. Registration for the multidisciplinary elective courses offered by the Yenepoya (deemed to be) University shall be at least one week prior to the commencement of the course with the CBCS coordinator. The CBCS unit shall notify the list of courses after being approved by the respective BOS. For SWAYAM/MOOC courses shall be as per the enrollment notification by the respective implementation authorities.

Yenepoya (deemed to be) University shall adapt the regulations of UGC governing SWAYAM/MOOC courses as amended from time to time.

3. Eligibility for admission:

To be eligible for admission a candidate shall have obtained a bachelor degree (B.Sc. Physician Associate) from university established under law considered equivalent by thereto by Yenepoya (Deemed to be University). The candidate shall have obtained minimum of 50% aggregate of marks in all the years of university examination of degree course. In case of SC/ST/OBC candidates the minimum marks shall be 45%.

4. Duration of the Programme

The duration of the programme shall extend over 4 semesters (2 academic years) of 15 weeks or more each with a minimum of 90 actual working days of instructions in each semester and 2 – 3 weeks of examinations. The successful completion will lead to Masters' degree in Physician Associate

Semester

An academic year shall consist of two semesters.

Odd Semester 1st& 3rd	September/October to February/March
Even semester 2nd& 4th	March/April to August/September

5. Maximum period for completion of the Program

A Candidate shall complete the four semesters (two years) program within four years from the date of admission.

6. Aim of the Program

The Postgraduate Physician Associate Program aims to develop competent, clinically skilled, and ethically responsible Physician Associates who are capable of delivering safe, effective, and patient-centred healthcare under the supervision of physicians, in accordance with the principles of Competency-Based Medical Education (CBME).

The program seeks to ensure that graduates acquire defined competencies in clinical assessment, diagnostic reasoning, patient management, procedural skills, communication, professionalism, teamwork, and lifelong learning. Through structured clinical training, workplace-based assessments, and reflective practice, the program prepares Physician Associates to function effectively within multidisciplinary healthcare teams, adapt to diverse clinical settings, apply evidence-based medicine, and uphold ethical, legal, and professional standards to meet the healthcare needs of individuals and communities.

7. Outcomes of the Program

Upon successful completion of the undergraduate course, students will develop a broad knowledge in the field of General Medicine& all other departments in evaluating, diagnosing & treating patients.

In particular, they will:

PO 1: Gather essential and accurate information about patients through history-taking, physical examination, and diagnostic studies to provide patient-centred care (K, C, A, **S**)

PO 2: Provide life support and perform emergency evaluation/care and initiate therapeutic procedures in life-threatening events jointly with or in the absence of a physician or other health professionals. K, C, A, **S**)

PO 3: Learn to develop and implement patient management plans (K, **C**, A, S)

PO 4**:** Record and present pertinent patient data, including interpretive recommendations, in a manner meaningful to the physician and members of the healthcare team (K, C, A, **S**)

PO 5**:** Promote health and wellness; instruct and counsel patients regarding physical and mental health, including proper diet, disease prevention, normal growth and development, family planning, lifestyle risks, situational adjustment reactions and other health care matters. (K, C, **A**, S)

PO 6: Demonstrate critical and creative thinking skills, informed value judgments and possess an educational foundation for continued growth and life-long learning. (K, **C**, A, S)

Expected skill to be acquired by the end of the programme:

PO 7: Effectively interact with different types of medical practice and delivery systems. (K, C, A, **S**)

PO 8: Partner with supervising physicians, health care managers, and other health care providers to assess, coordinate, and improve the delivery and effectiveness of health care and patient outcomes (K, C, **A**, S)

PO 9: Apply medical information and clinical data systems to provide effective, efficient patient care (K, C, A, **S**)

PO 10: Perform medical and surgical procedures essential to their area of practice. (K, C, A, **S**)

Program structure

	Broad category of course	Hours/Credits	Course (Title + Course Code)
1.	**Discipline-Specific Courses**		
a)	Theory	**I Semester**	
		45 Hours / 4 Credits	Internal Medicine-I
		45 Hours / 4 Credits	Cardiovascular & Thoracic Surgery
		45 Hours / 3 Credits	Biostatistics & Research Methodology
		II Semester	
		45 Hours / 3 Credits	Internal Medicine-II
		45 Hours / 3 Credits	Advanced Nephrology
		45 Hours / 3 Credits	Bioethics
		III Semester	
		45 Hours / 3 Credits	Neurology & Neurosurgery
		45 Hours / 3 Credits	Traumatology & orthopaedics
		45 Hours / 3 Credits	Health Care Management
		IV Semester	
		45 Hours / 3 Credits	Advanced Gastroenterology
		45 Hours / 3 Credits	Oncology
b)	Practical (SEC)*	**I Semester**	
		60 Hours / 2 Credits	Internal Medicine-I
		60 Hours / 2 Credits	Cardiovascular & Thoracic Surgery
		II Semester	
		60 Hours / 2 Credits	Internal Medicine-II
		60 Hours / 2 Credits	Advanced Nephrology
		III Semester	
		60 Hours / 2 Credits	Neurology & Neurosurgery
		60 Hours / 2 Credits	Traumatology & orthopaedics
		IV Semester	

		60 Hours / 2 Credits	Advanced Gastroenterology
		60 Hours / 2 Credits	Oncology
c)	Clinical (SEC)*	90 Hours / 6 Credits	Clinical Skills-I
		90 Hours / 6 Credits	Clinical Skills-II
		90 Hours / 6 Credits	Clinical Skills-III
		90 Hours / 6 Credits	Clinical Skills-IV
2.	**Curriculum Enrichment Courses**		
a)	Research Project	12 Credits	Dissertation
3.	**Electives**		
a)	Interdisciplinary Courses	45 Hours / 6 Credits per year	Coursera/Swayam/NSS/Red cross
	Total	**93 Credits**	

8. Attendance

8.1 Each course (theory, practical, clinical, etc.) shall be treated as an independent unit for attendance. Candidates having a minimum 80% attendance in each of the Courses can only qualify to appear for the Semester End Examination. The Candidates with less than 80% of attendance shall be required to repeat that Course by attending the semester.

8.2 There shall be no provision for condonation of the shortage of attendance.

8.3 For SWAYAM/MOOC/ NPTEL, it shall be as per the regulations governing the courses of the implementing authority.

8.4 The HOD/Course Coordinator, through the Dean of Faculties, shall announce the names of the candidates who will not be eligible to take the Semester End- Examinations (SEE) in the various courses and send a copy of the same to the Controller of Examinations (COE) Office. Registrations of such candidates for those courses shall be treated as cancelled.

9. Teaching-Learning Methods

Teaching - Learning method	Courses
Experiential learning	Clinical Skills I – IV
Integrated/Inter-disciplinary learning	Bioethics, Healthcare Management
Participatory learning	Bioethics, Health Care Management, Internal Medicine I & II, Cardiovascular & Thoracic Surgery, Advanced Nephrology, Traumatology & Orthopaedics, Neurology & Neurosurgery, Advanced Gastroenterology, Oncology
Problem-solving methodologies	Biostatistics & Research Methodology, Clinical Skills I–IV
Self-directed learning	Coursera / SWAYAM,
Patient-centric learning Evidence-based learning	Clinical Skills I–IV, Internal Medicine I & II, Cardiovascular & Thoracic Surgery, Advanced Nephrology, Traumatology & Orthopaedics, Neurology & Neurosurgery, Advanced Gastroenterology, Oncology
The Humanities	Bioethics
Project-based learning	Dissertation, Biostatistics & Research Methodology
Role-play	Bioethics, Health Care Management, Internal Medicine I & II, Traumatology & Orthopaedics,
Team-work	Clinical Skills I–IV

Reflective writing	Clinical Skills I–IV,
Any other (Simulation-Based Learning)	Internal Medicine I & II, Cardiovascular & Thoracic Surgery, Advanced Nephrology, Traumatology & Orthopaedics, Neurology & Neurosurgery, Advanced Gastroenterology, Oncology

10. Scheme of examination

10.1 Continuous Internal assessment format (distribution of marks)

Continuous Internal assessment components	Maximum marks
Average of two IA tests	20
Case Studies/Seminar/Assignments/Quizzes etc.	30
Total marks	50

10.2 Question Paper Pattern

Subjects having maximum marks = 50				Duration
Type of question	Number of questions	Marks for each question	Total	150 min
Long essay type	02	15	30	
Short essay Type	02	10	20	
Total			50	

10.3 Practical Examination

SI.NO	Components	Marks
1	Spotters	10
2	Case Scenario/OSCE/OSPE	20
3	Viva Voce	20
Total Marks		50

10.4 Particulars of practical, viva-voce & dissertation

Practical examination will be aimed at the examination of clinical skills and competence of the candidates for undertaking independent work as a specialist.

10.4.1. Viva-Voce examination shall aim at assessing the depth of knowledge, logical reasoning, confidence &oral communication skills.

10.4.2. Special emphasize shall be given to dissertation work during the MSc Physician Associate Program 2nd Year Examination.

10.4.3. The marks of the Viva-Voce examination shall be included in the clinical examination to calculate the percentage and declaration of results.

10.4.4. OSCE/OSPE shall have a minimum of 5 stations.

10.5 Evaluation and Certification of online courses:

10.5.1. Evaluation will be based on predefined norms and parameters and announced in the overview of the Course at the time of offering the course. Formative continuous online assessments and end of course proctored exams shall be completed by the student.

10.5.2. The certificate obtained shall be submitted to the college office which will be communicated to the office of the Controller of Examinations of Yenepoya (Deemed to be University).

10.5.3. The Yenepoya (Deemed to be) University will give the equivalent credit weightage to the students for the credits earned through online learning courses through MOOCS/Coursera as per the credit plan of the program.

10.6 Credit Mobility of Online Courses:

The Yenepoya (Deemed to be University) will give the equivalent credit weightage to the students for the credits earned through online learning courses as per the credit plan of the program.

10.6.1. In case a student fails to complete the online course he/ she may be allowed to complete the course requirements by registering for another online course in subsequent semester or opt for a course offered at Yenepoya (Deemed to be University), provided such a course is offered during that semester.

10.6.2. The elective course offered by the Yenepoya (Deemed to be University) shall be restricted to a maximum of 3 credits.

10.6.3. A candidate shall compulsorily complete total 6 Credits of Multidisciplinary courses.

10.6.4. These courses shall be selected either from the Generic Electives offered by the Yenepoya (Deemed to be) university or from the SWAYAM/Coursera courses. A Candidate shall have freedom to choose the courses of once own choice and learn at their own pace but, require to complete minimum 3 credits before second semester and 6 credits before third semester SEE.

10.6.5. A candidate who wishes to earn additional credits may be permitted to do so during the academic duration.

10.7 Continuous Internal Assessment Components of PG Dissertation

<table>
<tr><th>Sl. No</th><th colspan="2">Parameters</th><th>Marks</th></tr>
<tr><td>1.</td><td colspan="2">Maintaining the timeline</td><td>10</td></tr>
<tr><td rowspan="4">2.</td><td colspan="2">Presentation a Conference /CME/Publication (student can choose any of the criteria to avail 40 marks)</td><td rowspan="4">40</td></tr>
<tr><td>Criteria</td><td>Marks Allocated</td></tr>
<tr><td>Online Oral/Online Poster/Offline Poster presentation/Conference proceeding publications in Scopus/WoS indexed
journals/Publication of Copyright</td><td>20</td></tr>
<tr><td>Offline oral presentation at National/International Conference/Patents/Publication of Review Paper/Pilot Study/Study
Protocol in Indexed Journal</td><td>40</td></tr>
<tr><td>3.</td><td colspan="2">Manuscript submission (Based on the dissertation) to the Indexed journals (SCOPUS/WoS) along with submission
of final dissertation</td><td>50</td></tr>
<tr><td></td><td colspan="2">Total</td><td>100</td></tr>
</table>

10.8 Assessment of Research project

A declaration by the candidate that the work was done by him/her shall be included. The guide, Head of the Department and Head of the Institution shall certify the bonafide of the project. Total 200 marks shall be awarded for the research project and the marks distribution as follows:

- 100 marks – Dissertation evaluation by Internal and External examiners
- 100 marks – Continuous Internal Assessment

10.9 Evaluation of Dissertation

10.9.1. Dissertation shall be evaluated by two examiners, one external & one Internal for 100 marks from the panel of examiners approved by the Board of Studies and by the University.

10.9.2. The criteria for the evaluation shall be as prescribed by the Board of Studies.

10.9.3. Acceptance of the dissertation is a pre-requisite for a candidate to be eligible to appear in the final examination.

10.10 Guide:

The teaching experience required for recognition of guide shall be as given under:

DNB in Surgery/Medicine with 2 years of teaching experience after MD/DM programme/MSc.PA with 4 years teaching experience.

Student guide ratio: A recognized guide shall supervise dissertation work of not more than five students per academic year. The age of guide shall not exceed 68 years.

Co-Guide may be included provided the work requires substantial contribution from a sister department or from another institution recognized for teaching Yenepoya University or any other State level University.

10.11 Change of Guide:

In the event of registered guide leaving the Institute/ college due to any reason or in the event of death of the guide or any other valid reasons, guide may be changed with prior permission from the university only

Dissertation shall be evaluated by 2 examiners, one external & one Internal from the panel of examiners approved by the board of studies and by the University. The criteria for the evaluation shall be as prescribed by the board of studies.

Acceptance of the dissertation is a pre-requisite for a candidate to be eligible to appear in the final examination.

11.Eligibility to appear for University Examination

a. Each course (theory, practical, clinical etc.) shall be treated as an independent unit for the purpose of attendance. Candidates having minimum 80% attendance in each of the Courses can only qualify to appear for the Semester End Examination. The Candidates

with less than 80% of attendance shall be required to repeat that Course by attending the semester. There shall be no provision for condonation of shortage of attendance.

b. Evaluation of a course shall be done based on continuous internal assessment (CIA) mode followed by semester end university examination (SEE) for each course.
c. The components of CIA (Continuous Internal Assessment) may include sessional tests, Seminar/ Journal Club/ Case Studies /Assignment and other activities as determined by the board of studies in the respective departments.
d. The CIA: SEE percentage is 50:50 and minimum marks for CIA shall be 50% and SEE shall be 50%.
e. The pass marks per course shall be 50%
f. There shall be examinations at the end of each semester ordinarily during February/March for odd semesters and August/September for even semesters
g. The SEE duration shall be two and half hours.

12. Criteria for passing

h. The CIA: SEE percentage is 50:50 and minimum marks for CIA shall be 50% and SEE shall be 50%.
i. The pass marks per course shall be 50%
j. A candidate shall be declared to have passed the PG program if he/she secures atleast CGPA of 5.0 (Course Alpha-Sign Grade P) in the aggregate of both internal assessment and semester end examination marks.
k. The candidates who pass all the semester examinations in the first attempts in Two years are eligible for ranks provided they secure at least a CGPA of 8.0 (atleast Alpha-Sign Grade A).
l. The results of the candidates who have passed the fourth semester examination but not passed the lower semester examinations shall be declared as NCL (Not Completed Lower semester examinations). Such candidates shall be eligible for the degree only after completion of all the lower semester examinations.
m. A candidate who passes the semester examinations in parts is eligible for only CGPA and Alpha-Sign Grade but not for ranking.
n. There shall be no minimum marks with respect to internal assessment and viva-voce marks.

o. A candidate who fails in any of the project work/project report/dissertation shall reappear for the same and pass the examination subsequently within the nearest semester and examination schedule.

13. Carry over provisions

Carry over shall be allowed to the candidates up to IV semesters.

14.Grading and Classification

The results of successful candidates at the end of each semester shall be declared in terms of Grade Point Average (GPA) and Alpha-Sign Grade. The results at the end of the sixth semester shall be classified on the basis of the Cumulative Grade Point Average (CGPA) obtained in all the four semesters and the corresponding overall alpha sign grade.

a. Letter Grades and Grade Points:

Letter Grade	Grade Point	Range of Marks
O+(Outstanding)	10	90–100
O(Excellent)	9	80–89.99
A+(Very Good)	8	70–79.99
A(Good)	7	60–69.99
B+(Average)	6	55–59.99
P(Pass)	5	50–54.99
F(Fail)	<5	<50

b. Cumulative Grade Point Average (CGPA):

The results at the end of the fourth semester shall be classified on the basis of CGPA obtained in the four semesters and the corresponding overall letter grade. The letter grade as described below shall be adopted.

Letter Grade	CGPA Range
O+(Outstanding)	9.0–10.0
O(Excellent)	8.0–8.99
A+(Very Good)	7.0–7.99
A(Good)	6.0–6.99
B+(Average)	5.5–5.99
P(Pass)	5.0–5.49
F(Fail)	<5.0

Journals:

List of recommended Journals

a. Annals of Internal Medicine (American College of Physicians).
b. JAMA Internal Medicine
c. Journal of Internal Medicine (Wiley)
d. The Journal of Thoracic and Cardiovascular Surgery (JTCVS)
e. The Annals of Thoracic Surgery
f. Kidney International. Clinical Journal of the American Society of Nephrology (CJASN)
g. Dialysis Transplantation.
h. Neurology / NeurosurgeryNeurology (AAN).
i. Journal of Neurology, Neurosurgery & Psychiatry.World Neurosurgery.
j. Gastroenterology (AGA Institute).
k. Gut.American Journal of Gastroenterology.
l. Trauma/orthopaedics Journal of Orthopaedic Trauma.Injury.Journal of Bone and Joint Surgery (JBJS).
m. Oncology Journal of Clinical Oncology (ASCO).
n. The Lancet Oncology.Annals of Oncology.

SEMESTER I

INTERNAL MEDICINE – I

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

CLO 1: Practice the specialty of the med maintaining high professional standards. Identify social, economic, environmental, biological determinants of an adult and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care.

CLO 2: Demonstrate skills in documentation of case details including epidemiological data. Knowledge of basic sciences relevant to medicine appropriately.

CLO 3: Recognize conditions that may be outside the area of the specialty / competence and to refer them to an appropriate specialist

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
UNIT I Immunological Factors in Disease	**5 hours**	• Components Of the Immune System,	✓			20%	LE, SE
		• Mechanism Of the Immune Response	✓				
		• Immune Deficiency and Lympho proliferative Disorders	✓				
		• Types Of Immune Reaction and Their Relation to Human Disease	✓				
		• Suppression Of Immune Reactions and Their Effects		✓			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
UNIT II: Disturbances In Water and Electrolyte Balance	**5 hours**	• Sodium Depletion – Primary Water Depletion	✓			15%	LE, SE
		• Potassium Excess and Deficiency	✓				
		• Magnesium Deficiency					
		• Sodium And Water Accumulation	✓				
		• Disturbances In Hydrogen Ion Concentration		✓			
UNIT III: Disease of Cardiovascular System	**7 hours**	• Cardiac Dysrhythmias	✓			20%	LE, SE
		• Cardiac Failure	✓				
		• Rheumatic heart disease		✓			
		• Valvular Diseases	✓				
		• Congenital Heart Diseases	✓				
		• Ischaemic Heart Disease					
		• Pericardial Diseases		✓			
		• Cardiomyopathies And Myocarditis	✓				
		• Cardiac Tumours		✓			
		• Atherosclerosis	✓				
		• Diseases Of Aorta	✓				
		• Peripheral Vascular Diseases		✓			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
UNIT IV: Diseases of the Respiratory system	**6 hours**	• Disturbances Of Respiratory Functions	✓			30%	LE, SE
		• Diseases Of Upper Respiratory tract	✓				
		• Obstructive Airway Diseases					
		• Bronchiectasis –Lung Abscess	✓				
		• Broncholithiasis	✓				
		• Diffuse Infiltrative Diseases of Lung	✓				
		• Pulmonary Thromboembolism		✓			
		• Hypersensitivity Reactions of Lung		✓			
		• Environmental Lung Diseases – Primary Pulmonary Hypertension		✓			
		• Neoplasms Of Lung	✓				
		• Diseases Of Pleura, Mediastinum and Diaphragm	✓				
		• Corpulmonale		✓			
		Acute Respiratory Failure	✓				
Unit V: Diseases of the	**4 hours**	• Diseases Of Oesophagus	✓			15%	LE, SE
		• Peptic Ulcer	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
digestive system		• Gastritis And Other Diseases of Stomach Including Carcinoma	✓				
		• Diseases Of Small Intestine	✓				
		• Diseases Of Colon and Rectum	✓				
		Diseases Of Peritoneum And Mesentery		✓			
UNIT VI: Diseases of liver and biliary tract	**5 hours**	• Diagnostic Procedures in Liver Diseases	✓			20%	LE, SE
		• Derangement Of Hepatic Metabolism		✓			
		• Disturbance Of Biliary Metabolism					
		• Acute Hepatitis	✓				
		• Chronic Active Hepatitis	✓				
		• Cirrhosis Of Liver	✓				
		• Tumours Of Liver		✓			
		• Suppurative Diseases of Liver			✓		
		• Infiltrative And Metabolic Diseases Affecting the Liver,		✓			
		Diseases Of Gall Bladder and Bile Ducts	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
UNIT VII: Diseases of Pancreas	**3 hours**	• Acute And Chronic Pancreatitis	✓			5%	LE, SE
		• Prognostic Indicators	✓				
		• Tumors Of Pancreas		✓			

LE– Long Essay, SE – Short Essay

Recommended books:

- Walker BR, College NR. Davidson's principles and practice of medicine e-book. Elsevier Health Sciences; 2013 Dec 6.
- Das KK. Textbook of Medicine: Two Volume Set. JP Medical Ltd; 2017 Sep 30.
- Vasnaik, Essentials of Emergency Medicine, (2001) 2nd edition, J.P. Brothers Medical Publishers Ltd.
- Michael Swarsh, Michael Glynn, Hutchison Clinical Methods –An Integrated Approach to Clinical Practice, (2007). 22 nd edition, Elsevier Saunders.
- Mark Kinirons and Harold Ellis, French's Index of differential diagnosis-An A-Z, (2005). 14th edition, Hodder Arnold -a Hachette UK Company

CARDIOVASCULAR & THORACIC SURGERY

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

At the end of the course the candidate must be able to:

- Describe and discuss cardiovascular physiology and the influence of cardiovascular disease on normal physiology.
- Know various operative approaches to the chest and understand indications for various preoperative studies of the chest and become familiar with their interpretation (Chest x-rays, angiography, echocardiograms, EKGs).

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Question
Unit I: Cardiovascular Surgery I	8 hours	• PDA Ligation & PA Banding	✔			20%	LE, SE
		• Blalock Taussig Shunt, Glenn procedure	✔				
		• Valvotomy, Valvoplasty		✔			
		• Balloon Embolectomy		✔			
		• Repair and replacement of valves	✔				
		• CABG	✔				
		• ASD And VSD Closure,	✔				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Question
		• Tetralogy Of Fallot Correction,	✔				
		• Surgery For Transpositions of great arteries	✔				
Unit II: Cardiovascular Surgery II	8 hours	• Heart - Lung Transplant - Physiology, Pharmacology - Donor - Recipient	✔			20%	LE, SE
		Selection, Immuno suppression Etc.					
		• VATS		✔			
		• Minimal invasive cardiac surgery	✔				
		• Cardiac Assist Devices – pacemaker, Artificial Heart, IABP, VAD	✔				
		• Advanced cardiac & respiratory support - ECMO, Ventilation, Blood Substitutes	✔				
		Current Advances and Concepts in Drugs,		✔			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Question
		Equipments, And Monitoring methods					
Unit III: Basics – Cardiopulmonary Bypass	8 hours	• Heart lung machine: Principles, Equipment, Oxygenators, Haemo filtration, Hypothermia	✔			20%	LE, SE
		• Cannulation Techniques & Protocols Myocardial Protection, Haemodilution monitoring Methods, Complications & Management					
		• Subsystem Care - Cerebral, Renal Hepatic Protection Cerebral Protection,	✔				
		Cerebral Monitoring Total Circulatory Arrest, Left Heart Bypass					

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Question
		• Anaesthesia Management During CPB Pharmacokinetics & Pharmacodynamics of Drugs During CPB	✔				
UNIT IV: Complications of cardiac surgery	8 hours	• Normal Postoperative Course	✔			20%	LE, SE
		• Overview of Complications, Hypotension and Tamponade, Chest Pain and Ischemia, Late arrhythmias, Hypertension, Pericardial complications	✔				
		• Complications of valve surgery, Respiratory complications, and Renal complications	✔				
		• Gastrointestinal Symptoms, Gastrointestinal Complications,	✔				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Question
		• Hepatobiliary complications, Stroke, Management of stroke, Neurological complications,	✔				
UNIT V: Cardiac anaesthesia	5 hours	• Basic Principles of Anaesthesia, Conduct of Anaesthesia,	✔			10%	SE
		• Pre-Bypass Anaesthetic Management,	✔				
		• Anaesthetic Management on Bypass,	✓				
		• Anaesthetic Management Post–Bypass,	✓				
		• Anaesthesia For Off – Pump Surgery.	✓				
UNIT VI: Pulmonary conditions	8 hours	• Lung resection, Benign tumour of the lung, carcinoma of the lung, lung abscess, bronchiectasis,	✓			10%	LE, SE

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Question
		bullous lung disease,					
		• Emphysema, pulmonary tuberculosis, hydatid cysto lungs, pulmonary arteriovenous malformations,		✓			
		• Aspergilloma of the lung, jet ventilation bronchoscopy,	✓		✓		
		• Pleural and parietal conditions: Empyema, pyothorax, haemothorax, pneumothorax, fibrothorax	✓	✓			
		• Flail chest, diaphragmatic hernia, chest wall and sternal deformities, mediastinal tumour,	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Question
		• Tracheal injuries, tracheal tumour, tracheostomy, tracheal operations	✓				

LE– Long Essay, SE – Short Essay

Recommended books:

- Dion RA. Cardiac Surgery in the Adult: Edited by Lawrence H. Cohn, MD, and L. Henry Edmunds, MD, New York, McGraw-Hill Professional, 2003, 1573 pp, illustrated, $250.00, ISBN: 0-07139-1290. The Annals of Thoracic Surgery. 2004 Aug 1;78(2):729.
- Sellke F, Pedro J, Swanson SJ. Sabiston and Spencer Surgery of the Chest E-Book. Elsevier Health Sciences; 2015 Aug 3.
- Topol EJ, Teirstein PS. Textbook of interventional cardiology E-Book. Elsevier Health Sciences; 2015 Aug 21.

CLNICAL SKILLS I

a. Practical I

Course: Core

Credits: 4 **Number of Hours: 120**

COURSE OUTCOMES:

- To familiarize with different investigations (Imaging and Laboratory)
- To understand important diagnostic procedures
- To understand about the diagnosing of illnesses in adults based on the analysis of history, physical examination and investigative work up
- To plan and deliver comprehensive treatment for illness in adults using principles of rational drug therapy

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Type of Questions
UNIT I:	40 hours	History, examination and writing of records:	✓			40	_
		History taking should include background information, presenting complaints with duration, history of present illness, past medical and surgical history, family history,	✓				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Type of Questions
		personal and social history, occupational history, treatment history, and review of systems.					
		Detailed physical examination should include general examination, systemic examination (Chest, Cardio-vascular system, Abdomen, Central nervous system, locomotor system and joints).	✓				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Type of Questions
		Skills in writing up notes, maintaining problem-oriented records, progress notes, and presentation of cases during ward rounds, planning investigations and making a treatment plan should be taught.	✓				
		Bedside procedures & Investigations: Therapeutic skills: Venipuncture and establishment of vascular access, Administration of fluids, blood, blood components and parenteral nutrition,	✓				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Type of Questions
		Nasogastric feeding, Urethral catheterization, Administration of oxygen, Cardiopulmonary resuscitation, Endotracheal intubation, Intrathecal administration of drugs, Common dressings, Abscess drainage					
UNIT II:	40 hours	Investigative skills: Venous blood sampling, Arterial blood sampling, Lumbar puncture, Bone marrow aspiration, Pleural, Peritoneal & Pericardial tap, Biopsy of liver and kidney.	✓			30	_

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Type of Questions
		Bedside investigations: Hemoglobin, TLC, DLC, ESR, Peripheral smear staining and examination, Urine: routine and microscopic examination, Stool					
		Fortify the skills of hemodynamic monitoring in emergency situations and should learn procedures like arterial line insertion, temporary venous pacing, central line insertion, pericardiocentesis, re-exploration for bleeding, intra-aortic balloon pump insertion, swan	✓				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Type of Questions
		ganz catheter insertion, ventilators etc.					
UNIT III:	40 hours	Assisting for all open heart and closed heart procedures.	✓			30	_
		Other CVTS procedures like Peripheral Vascular Surgery, Thymectomy, and Trauma Surgery.	✓				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Type of Questions
		Analyse the history and correlate it with clinical findings with the assistance of basic investigations like ECG, X-Ray, Echocardiography, CT scans, Coronary and CT Angiography etc. Besides, during the bed side rounds he/she should learn to improvise on management skills, haemodynamic monitoring, fluid balance, arterial blood gas analysis and identification of cardiac emergencies like	✓				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Type of Questions
		tamponade, arrhythmias etc.					

b. Practical II

Course: Core **Number of Hours: 270**

Credits: 6

COURSE OUTCOMES:

- Acquires knowledge about the disease, its diagnosis, its management, treatment and Clinical decision Making.
- To interact with the patients and collect detailed history about the patient.

COURSE CONTENT:

In this course students will be posted in various specialities in hospital and participate in journal clubs. The student will get experience in various aspects in diagnosis and

management of diseases under the supervision of experienced professionals and is expected to work and contribute in the unit

SEMESTER II

INTERNAL MEDICINE – II

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

- Practice the specialty of the med maintaining high professional standards.
- Identify social, economic, environmental, biological determinants of an adult and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care.
- Demonstrate skills in documentation of case details including epidemiological data. Knowledge of basic sciences relevant to medicine appropriately.
- Recognize conditions that may be outside the area of the specialty / competence and to refer them to an appropriate specialist

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit I: Diseases of Kidney and Urinar	**8 hours**	1.1 Acute and Chronic Renal Failure,	✓			20%	LE, SE
		1.2 Glomerulonephritis	✓				
		1.3 Nephrotic Syndrome	✓				
		1.4 vascular diseases of Kidney	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
y System		1.5 Toxaemia of Pregnancy		✓			
		1.6 Infections of the Urinary Tract	✓				
		1.7 Obstructive Uropathy – Nephrolithiasis	✓				SE
		1.8 Cystic Diseases of The Kidneys	✓				
		1.9 Other Congenital and Hereditary Disorders of The Kidney and Urinary Tract		✓			
		1.10 Tumours of the Urinary tract.	✓				
UNIT II: Diseases of the Endocrine System	**8 hours**	2.1 The Hypothalamus and Pituitary Gland	✓			10%	LE, SE
		2.2 Diseases of Anterior Lobe of Pituitary		✓			
		2.3 Diseases of Adrenal Cortex and Medulla	✓				
		2.4 Diseases of Testis and Ovaries, Pineal Gland	✓				
		2.5 Diabetes Mellitus, and its complication,	✓				SE
		2.6 Disease of thyroid	✓				
UNIT III: Disease	**8 hours**	3.1Blood Formation Blood Destruction	✓			15%	LE, SE

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
s of the Blood and Blood Forming Organs		3.2 Anaemia	✓				
		3.3 Bone Marrow Failure	✓				
		3.4 Blood Groups and Transfusions	✓				
		3.5 Polycythemia		✓			SE
		3.6 Abnormal Haemoglobin	✓				
		3.7 Disorders of Platelets	✓				
		3.8 Haemorrhagic disorder	✓				SE
		3.9 Leukaemia	✓				
		3.10 Lymphomas	✓				
		3.11 Diseases of Spleen and Reticulo Endothelial System.		✓			
UNIT IV: Diseases of Connective Tissues, Joint and Bones	**7 hours**	4.1Rheumatoid Arthritis	✓			20%	LE, SE
		4.2 Ankylosing Spondylitis	✓				
		4.3 Systemic Lupus Erythematosis		✓			
		4.4 Scleroderma	✓				
		4.5 Polymyalgia Rheumatica		✓			
		4.6 Gout	✓				SE
		4.7 Pseudo Gout		✓			
		4.8 Osteoarthritis,	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		4.9 Diseases of Bone	✓				LE, SE
		4.10 Metabolic and Endocrine Diseases, Tumors and Bone, Metabolic and Endocrine Diseases of bone, Paget's Disease	✓				
Unit V: Diseases of the Nervous System	**7 hours**	5.1 Diagnostic Methods in Neurology	✓			30%	LE, SE
		5.2 Coma	✓				SE
		5.3 Headache,	✓				
		5.4 Epilepsy	✓				
		5.5 Diseases Of Peripheral Nervous System	✓				
		5.6 Diseases of Cranial Nerves	✓				LE, SE
		5.7 Diseases of Spinal Cord	✓				
		5.8 Cerebro Vascular Diseases	✓				
		5.9 Traumatic Diseases of Brain	✓				
		5.10 Neoplasms,	✓				
		5.11 Tuberculosis and Viral Infections	✓				SE
		5.12 Multiple Sclerosis		✓			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		5.13Demyelinating Diseases		✓			
		5.14 Metabolic and Nutritional Diseases of Brain	✓				
		5.15Degenerative Diseases of Nervous System,	✓				
		5.14 Narcolepsy, Migraine	✓				
		5.15 Disease of Extrapyramidal System		✓			
UNIT VI: Diseases of the Skin	**7 hours**	6.1 Interpretation of Alterations in the Skin	✓			30%	LE, SE
		6.2 Lesions of General Medical Significance	✓				
		6.3 Generalized Pruritus		✓			SE
		6.4 Pigmentation of the Skin and Disorders of Melanin Metabolism	✓				
		6.5 Photo Sensitivity and Other Reactions to Light	✓				
		6.6 Hirsutism and Alopecia		✓			
		6.7 Cutaneous Manifestations of Internal Malignancy		✓			SE
		6.8 Psoriasis	✓				
		6.9 Pemphigus		✓			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		6.10 Scabies and Fungal Infections of The Skin.	✓				LE, SE
		6.11 Systemic disease &its skin manifestation	✓				

LE– Long Essay, SE – Short Essay

RECOMMENDED BOOKS:

- Walker BR, College NR. Davidson's principles and practice of medicine e-book. Elsevier Health Sciences; 2013 Dec 6.
- Das KK. Textbook of Medicine: Two Volume Set. JP Medical Ltd; 2017 Sep 30.
- Vasnaik, Essentials of Emergency Medicine, (2001) 2nd edition, J.P.Brothers Medical Publishers Ltd.
- Michael Swarsh, Michael Glynn, Hutchison Clinical Methods –An Integrated Approach to Clinical Practice, (2007). 22 nd edition, Elsevier Saunders.
- Mark Kinirons andHarold Ellis, French's Index of differential diagnosis-An A-Z, (2005). 14th edition, Hodder Arnold -an Hachette UK Company

ADVANCED NEPHROLOGY

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

- Understand the normative data and be able to classify a patient by hypertension stage. Basic evaluation and work up of a patient presenting with hypertension. General anti-hypertensive management strategies
- Evaluation and differential diagnosis of microscopic haematuria -Evaluation and differential diagnosis of gross haematuria, including glomerulonephritis
- Evaluation of asymptomatic/isolated proteinuria. Evaluation and management of nephrotic syndrome

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
Unit I: Renal anatomy and physiology	9 hours	Gross Anatomy Embryology Histology including Electron, Microscopy study of the Kidney	✔			20	LE, SE
		Renal circulation and Glomerular ultrafiltration. Solute transport / Both Organic and inorganic.	✔				
		Urine Concentration & Dilution		✔			
		Role of Kidney in Blood pressure regulation.	✔				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
		Endocrine and Autocrine functions of the kidney.		✔			
		Integrated Control of Body Fluid Volume and Composition.; Vasoactive peptides / Arachidonic Acid Metabolites, Sodium – Water Balance, Potassium Balance, Acid Base Balance, Calcium and Phosphorus Metabolism, Magnesium metabolism.	✔				
		Epidemiology of Kidney Disease, Risk Factors and Kidney Disease, Aging and Kidney Disease			✔		
Unit II: Disorders Of Kidney Function	10 hours	AKI – Pathogenesis / Diagnosis / Therapy	✔			25	LE, SE
		Glomerular disease – Primary and Secondary	✔				
		Micro and Macro Vascular Diseases of the kidney	✔				
		Tubulo Interstitial Diseases		✔			
		UTI / Pyelonephritis / Reflux Nephropathy	✔				
		Urinary tract obstruction and Obstructive Nephropathy	✔				
		Diabetic Nephropathy	✔				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
		Nephrolithiasis		✔			
		Renal Neoplasia	✔				
		Kidney disease in tropics		✔			
		Pregnancy and Kidney diseases.		✔			
		Inherited Diseases of the Kidney		✔			
		Cystic diseases of kidney		✔			
		Hypertension and kidney disease	✔				
Unit III: Paediatric Nephrology	8 hours	Developmental Nephrology		✔		15	LE, SE
		Congenital diseases of the kidneys, ureters, urinary bladder and urethra.	✔				
		Glomerular and tubular diseases	✔				
		Systemic diseases affecting the kidney	✔				
		Acute and Chronic Kidney Failure	✔				
		Dialysis and Transplantation with respect to Pediatric Nephrology.	✔				
Unit IV: Chronic	10 hours	**1. Path physiology of Uremia its Systemic manifestation**				25	LE, SE

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
Kidney Disease		· Pathophysiology of Uremia	✔				
		· Cardiovascular Aspects of Chronic Kidney Disease	✔				
		· Hematologic Aspects of Kidney Disease	✔				
		· Endocrine Aspects of Kidney Disease	✔				
		· Neurologic Aspects of Kidney Disease	✔				
		· Mineral Bone Disorders in Chronic Kidney Disease	✔				
		2. Conservative and Pharmacological management:					
		· Diet and Kidney Disease	✔				
		· Specific Pharmacologic Approaches to Clinical Renoprotection		✔			
		· Erythropoietin Therapy in Renal Disease and Renal Failure	✔				
		· Vitamin D, Calcimimetics, and Phosphate Binders	✔				
		· Prescribing Drugs in Kidney Disease	✔				
		3. Invasive Management.					
		· Hemodialysis	✔				
		· Peritoneal Dialysis	✔				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
		· Intensive Care Nephrology	✔				
		· Plasmapheresis	✔				
		· Extracorporeal Treatment of Poisoning	✔				
Unit V: Renal Transplantation And recent Advances	8 hours	· Transplantation Immunobiology	✔			15	LE, SE
		· Donor and Recipient Issues	✔				
		· Clinical Management	✔				
		· Attaining Immunologic Tolerance		✔			
		· Xenotransplantation		✔			
		· Tissue Engineering and Regeneration		✔			
		· Stem Cells in Renal Biology and Medicine		✔			

LE– Long Essay, SE – Short Essay

RECOMMENDED BOOKS:

- Morrison G. Reviews, Notes, and Listings: Nephrology: Oxford Textbook of Clinical Nephrology.
- Massry and Glassock's Text Book of Nephrology Saul G Massry and RJ Glassock
- The Kidney: Physiology and Pathophysiology DW Seldin and G Giebisch

CLNICAL SKILLS II

a. Practical I

Course: Core

Credits: 4 **Number of Hours: 120**

COURSE OUTCOMES:

- To familiarize with different investigations (Imaging and Laboratory)
- To understand about the diagnosing of illnesses in adults based on the analysis of history, physical examination and investigative work up
- Recognize and identify the various renal problems
- Institute diagnostic, therapeutic, rehabilitative and preventive measures to provide holistic care to the patient
- Take detailed history, perform full physical examination and make clinical diagnosis, perform relevant investigative and therapeutic procedures
- Interpret important imaging and laboratory results

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
Unit -I	120 HOURS	The candidate is expected to perform routine urine examination and ultrasonography.	✔			100	

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
		In addition, he/she must familiarise himself/herself with the following investigations: **Laboratory:** • Electrolyte and acid-base analysis • Renal function tests • Auto analyser functioning • Renal pathology interpretation, including immuno-fluorescence and electron microscopy	✔				
		Radiological: • Intravenous urography • Micturating cystourethrography • Digital subtraction angiography • Selective renal angiography and interventional angioplasty and stenting • Selective renal	✔				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
		venography • Doppler studies • Antegrade and retrograde pyelography • CT imaging • Magnetic resonance imaging					
		Nuclear Medicine: • Various renal isotope imaging and functional techniques • Urodynamic studies	✔				
		Microbiology: • Viral, Bacterial and fungal cultures, Serological and PCR techniques	✔				
		Immunological test: • ANCA, ANA, anti-DsDNA, complement, anti-GBM ab, cryoglobulin, immunoelectrophoresis	✔				

Unit	T/L	Contents/ SLOs	Must know	Good to know	Desirable to know	Weightage in %	Types of Question
		Tissue typing: • Cross-match, serological typing, molecular HLA typing, PRA, Renal function testing • Renal plasma flow, GRF • Renal concentrating, diluting capacity • Microalbuminuria • Proteinuria measurement • Urinary acidification • Renal sodium and potassium handling	✔				

b. Practical II

Course: Core **Number of Hours: 270**

Credits: 6

COURSE OUTCOMES:

- Acquires knowledge about the disease, its diagnosis, its management, treatment and Clinical decision Making.
- To interact with the patients and collect detailed history about the patient.

COURSE CONTENT:

In this course students will be posted in various specialities in hospital and participate in journal clubs. The student will get experience in various aspects in diagnosis and management of diseases under the supervision of experienced professionals and is expected to work and contribute in the unit

SEMESTER III

NEUROLOGY & NEUROSURGERY

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

Acquire comprehensive knowledge of the basics of Neurology including all allied specialities related to Neurology like Neuroanatomy, Neurophysiology, Neurochemistry, Neuropharmacology, Neuroimaging, Neuropathology, Neuroinfections, Preventive Neurology, Neuroepidemiology and Neurosurgery.

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit I: Introduction	**5 hours**	1.1 Neuroanatomy	✓			10%	LE, SE
		1.2 Neurophysiology	✓				
		1.3 Molecular genetic (Inherited neurological disorders Genetic control of neural connectivity Inborn errors of metabolism Molecular genetics of CNS tumours)	✓				
		1.4 Neurotoxicology		✓			
Unit II: Clinical Neurology	**15 hours**	2.1 General Evaluation of the Patient		✓		35%	SE
		2.2 Coma	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		2.3 Seizures and Epilepsy and Syncopes	✓				
		2.4 Pain	✓				
		2.5 Hearing disorders		✓			
		2.6 Headaches and other Cranial Neuralgias	✓				
		2.7 Cerebrovascular Diseases	✓				LE, SE
		2.8 Dementias Parkinsonism and Movement Disorders	✓				
		2.9 Ataxic Syndromes		✓			
		2.10 Cranial Neuropathies	✓				
		2.11 CNS Infections	✓				
		2.12 Neuroimmunology Diseases		✓			
		2.13 Neurogenetic Disorders		✓			
		2.14 Developmental Disorders of Nervous System	✓				
		2.15 Myelopathies	✓				SE

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		2.16 Peripheral Neuropathies Myopathies and Neuromuscular Junction Disorders	✓				
		2.17Paediatric Neurology			✓		
		2.18 Cognitive Neurology and Neuropsychiatry			✓		
		2.19Tropical Neurology			✓		
Unit III: Diagnostic Neurology	**10 hours**	3.1 Principles of computerized tomography		✓		15%	LE, SE
		3.2 MRI of the brain, skull and spine		✓			
		3.3 EEG	✓				
		3.4 EMG	✓				
		3.5 Interventional Neurology Neuro instrumentations		✓			
		3.6 Advances in Neuroimaging Techniques	✓				
	15 hours	4.1 Neurological history taking		✓		40%	SE

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit IV: Clinical Neurosurgery		4.2 Neurological examination		✓			
		4.3 General management of Head injuries: scalp, skull injuries, acute cerebral compression, hematoma birth injuries Glasgow coma scale, Investigation management of head injuries	✓				LE, SE
		4.4 Management of soft tissue injuries: Wound exploration under local and general anaesthesia Wound debridement Arrest of scalp haemorrhage Layered closure of the scalp without tension Suturing technique Wound drainage and head bandaging	✓				SE

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		4.5 Spontaneous intracranial haemorrhage	✓				
		4.6 Management of hydrocephalus	✓				
		4.7 Intracranial tumors: The neuropathology of primary and secondary intracranial tumours including: - classification - epidemiology - natural history	✓				LE, SE
		4.8 Clinical presentations of intracranial tumours Indications for neuroimaging	✓				
		4.9 Management of raised intracranial pressure	✓				SE
		4.10 Principles of operative management Detection and management of	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		post-operative complications					
		4.11 Acute spinal disorders: The assessment and peri-operative management of patients presenting with spinal cord, caudaequina and spinal root compression, The management of spinal shock	✓				LE, SE
		4.12 Cranial surgeries		✓			
		4.13 Spinal surgeries		✓			
		4.14 Neurovascular surgery		✓			

Recommended books

1. Kenneth W, Lindsay B, Bone I, Lindsay KW. Neurology and neurosurgery illustrated. Elsevier Health Sciences; 2010.
2. Handbook of neurosurgery neurology and spine medicine Michael Y woag, Andrea L strayer
3. Waxman SG. Clinical neuroanatomy. McGraw-Hill Education; 2016.

4. Armin S. Minimally Invasive Neurosurgery.: Mark R. Proctor and Peter M. Black, editors. Totowa, NJ: Humana Press, 2005, 448 pp, illus, ISBN 1–58829–147–2. Price $175.00. Journal of Neurosurgery. 2006 Feb 1;104(2):335-.

TRAUMATOLOGY AND ORTHOPAEDICS

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

- Explain the principles of recognition of bone injuries and dislocation.
- Apply suitable methods to detect and manage common infections of bones and joint; learn indications for sequestrectomy, amputations.
- Identify congenital, skeletal anomalies and their referral for appropriate correction or rehabilitation.
- Recognize metabolic bone diseases relevant to Indian context.
- Explain etiopathogenesis, manifestations, and diagnosis of neoplasms affecting bones.
- Enumerate few recent advances in Orthopaedics.

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit I: Traumatology	12 hours	1.1 Fractures and dislocations This shall include the mechanism of violence causing the injury, pathology of fracture healing- signs and symptoms – the mechanics of displacement of fragments – reduction, maintenance of reduction of fractures and dislocations by various methods – study	✓			35	LE, SE

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		of complications of osteoarticular injuries and their treatment and rehabilitation					
		1.2 First Aid emergency management of fractures and dislocations – Resuscitation and management of multiple injuries					
		1.3 Contusions and other soft tissue injuries – sprains of ligaments of various joints – mechanism of production, their pathology, symptomatology and management					
		1.4 Peripheral nerve injuries and spinal cord injuries – mechanism of production – symptomatology – pathophysiology, investigation including electrodiagnosis –					

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		physiotherapeutic management – surgical treatment – splinting and bracing – rehabilitation					
Unit II: General Orthopaedics	10 hours	2.1 Deformities – congenital and acquired including their management	✓			25	LE, SE
		2.2 Osteo articular tuberculosis – Incidence, bacteriology, pathology, symptomatology, investigations and management, both conservative and surgical		✓			
		2.3 Infections: Bacteriology – pathology – clinical features and management in acute, subacute and chronic infections of bone	✓				
		2.4 Arthritis – includes the study of various types of arthritis including infective,					
		2.5 Rheumatoid, metabolic and degenerative conditions –		✓			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		pathophysiology, investigations and management including arthroplasty.					
		2.6 Tumors of bone and joints	✓				
		2.7 Neuromuscular disorders					
		2.8 Metabolic disorders of the skeletal system		✓			
Unit III: Physical Medicine and Rehabilitation	8 hours	3.1 Principles of Physical therapy including exercise therapy, electro therapy, prescription of splints and brace	✓			15	LE, SE
		3.2 Principles of occupational therapy	✓				
		3.3 Principles of electro diagnosis		✓			
		3.4 Prosthesis and Orthotics	✓				
		3.5 Principles of amputation surgery– rehabilitation of the amputee – examination and prescription for orthosis and prosthesis – check up and fitting	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		3.6 The concept of Total Rehabilitation including Medical, Educational, Vocational and social Rehabilitation	✓				
Unit IV: Principles & Practice of Orthopaedics Including Recent Advances	15 hours	4.1 Bone infections (Pyogenic, tuberculosis, syphilis, mycotic infections, salmonella & brucella osteomyelitis)	✓			25	SE, LE
		4.2 congenital deformities (upper & lower extremities, spine and general defects), developmental conditions (osteogenesisimperfecta, dysplasias, hereditary multiple exostosis etc.)					
		4.3 Diseases of the joints (osteoarthritis, rheumatoid arthritis, neuropathic joints, ankylosing spondylitis, seronegative spondyloarthropathy, traumatic arthritis etc.					
		4.4 Orthopaedic neurology, tumours of bone					

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		4.5 Disorders of hand & their management					
		4.6 Pediatric orthopaedics- congenital and developmental disorders such as CTEV (club-Foot), development dysplasia of hip, congenital deficiency of limbs. Perthe ‘s disease and infections, and					
		4.7 Orthopaedic oncology					
		4.8 Sports Medicine including arthroscopy		✓			
		4.9 Spine Surgery -spinal disorders such as scoliosis, kyphoscoliosis, spinal trauma, PIVD, infections (tuberculosis and pyogenic), & tumours regarding their clinical presentations and management.	✓				

Recommended books

- Miller MD, Thompson SR, Hart J. Review of orthopaedics e-book. Elsevier Health Sciences; 2012 Apr 23.

- Miller MD, Hart J, MacKnight JM. Essential Orthopaedics E-Book. Elsevier Health Sciences; 2019 Apr 7.
- Natrajan MV. Natarajan's Textbook of Orthopaedics& Traumatology. Wolters kluwerindia Pvt Ltd; 2018 Aug 28.
- Luqmani R, Joseph B, Robb JE, Porter D. Textbook of orthopedics, trauma and rheumatology. Elsevier Health Sciences; 2012 Dec 20.
- Gupta MC. Degenerative scoliosis: options for surgical management. Orthopedic Clinics. 2003 Apr 1;34(2):269-79.

HEALTH CARE MANAGEMENT

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

CO 01: Concepts of Hospitals – The student will gain knowledge about hospital administration &planning.

CO 02: Workflow in hospitals - Enumerate and identify various Clinical Services like OPD, IPD, ward Management, OT, Emergency, disaster Management and ICU.

CO 03: Organizational Structures - To learn to meet special challenges posed by human behaviour in workplace of 21stcentury

CO 04: Quality management - To create awareness about the process of applying for and implementing various accreditation processes in health care facilities.

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit-I	4 hours	Hospital Structure 1.1. Introduction to Hospitals, Healthcare & Medical Care, Rationale of Hospital Administration	✔		✓	5%	SE
		1.2. History of Hospitals, Public Health Delivery system in India, Types of Hospitals, Voluntary Health Organization					
Unit-II	8 hours	**Management of Healthcare Organizations**	✔			20%	LE, SE
		2.1 Introduction to Management					

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		2.2 Evolution & Theories of Management		✔			
		2.3 Management Functions: Planning	✔				
		2.4 Organizing	✔				
		2.5 Controlling	✔				
		2.6 Decision Making	✔				
		2.7 Staffing	✔				
Unit-III	7 hours	3.1The Importance of Interpersonal Skills, Scope & Process of OB Structure & theories	✔			15	LE, SE
		3.2 Motivation - Abraham Maslow's hierarchy of needs theory, Theory X&Y. Contemporary theories of motivation.	✔				
		3.3Foundations of Group Behavior – Formal Vs Informal, Social Identity Theory		✔			
		3.4 Organizational Culture		✔			
		3.5 Communications in an Organization	✔				
Unit-IV	7 hours	**Management and Health Economics**				20	LE, SE
		4.1Demand&Supply	✔				
		4.2NatureofCosts	✔				
		4.3Marginalcostandbreakeven analysis	✔				
		4.4 Market structure: Business & Government, Role of Government	✔				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit-V	7 hours	**Accounting for Hospital Management**	✔			20	LE, SE
		5.1Budgeting & Budgetary control - Classification of budget, P & L, Balance Sheets					
		5.2 Types of Accounts, Debit & Credit					
		5.3 Financial Statement Analysis					
Unit-VI	7 hours	**Concept of Hospital**	✓			10	LE, SE
		6.1DepartmentationinHospital					
		6.2 Outpatient, Inpatient Services					
		6.3IntensiveCareUnit, Emergency Services					
		6.4Laboratory, Radiology					
		6.5Organizingofsupportservices, Utility Services					
		6.6EvaluationofHospitalservices – Hospital Statistics					
		6.7HospitalInformationSystems- Issues related to Healthcare technology, Planning, Infrastructure					
Unit-VII	5 hours	**Evolution of Quality management**				10	LE, SE
		7.1 Quality Management Tools & methods	✓				
		7.2 Quality certification & Accreditation– NABH, NABL	✓				

LE– Long Essay, SE – Short Essay

Recommended books

- PrasadLM.Principles and Practice of Management.SultanChand&Sons;2020Oct1
- RobbinsSP, JudgeTA, VohraN.Organizationalbehaviourbypearson18e.Pearson Education India; 2019.
- Sakharkar B.M. Hospital planning &administration. Jaypee Brothers Medical Publishers Pvt. Limited, 2008 Dec 1.
- FrancisCM, DeSouzaMC.Hospital administration. Jaypee Brothers Medical Publishers; 2000.KulkarniGR, SatyashankerP, AnilGomesL.Financial management for hospital administration. Jaypee Brothers Medical Publishers Pvt. Limited, 2009

CLNICAL SKILLS III

a. Practical I

Course: Core

Credits: 4 **Number of Hours: 120**

COURSE OUTCOMES:

- To familiarize with different investigations (Imaging and Laboratory)
- To understand about the diagnosing of illnesses in adults based on the analysis of history, physical examination and investigative work up
- Recognize and identify the various neurological and ortho problems
- Institute diagnostic, therapeutic, rehabilitative and preventive measures to provide holistic care to the patient
- Take detailed history, perform full physical examination and make clinical diagnosis, perform relevant investigative and therapeutic procedures
- Interpret important imaging and laboratory results

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %
Unit-I	**120 Hours**	Possess complete Clinical Diagnostic Skills for the recognition of common Nervous system diseases	✓			100

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %
		Possess a complete knowledge of all the commonly used Neurophysiological diagnostic Tests like Electroencephalography, Electroneurography, Electromyography, Cerebral evoked potentials.	✓			
		Acquire skills in the interpretation of special investigations such as Polysomnography, Video EEG monitoring, EEG-Telemetry, autonomic function tests, Transcranial Doppler tests	✓			
		Acquire skills in interpretation of common neuroimaging investigations such as CT scanning, MRI scanning, MR and Digital subtraction angiography, Myelography, MR spectroscopy and Single	✓			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %
		Photon Emission Computerised Tomography				
		Acquire skills in administering invasive procedures such as lumbar puncture, intrathecal drug administration, CSF manometry; assisting in digital subtraction angiography and intraarterial thrombolysis; and Nerve and muscle biopsy and their interpretation of relevant histopathology	✓			
		Bedside history taking in ward.	✓			
		Assisting procedures in Operation theatre and casualty.	✓			
		Examine indoor (medical; preoperative and postoperative) patients.	✓			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %
		Learn examination, principles of treatment and techniques of traction, wound care and splintage	✓			
		Attending ward rounds	✓			
		Learn plaster application, post plaster care.	✓			
		Learn to explain prognosis of fractures/ diseases to patients posted for surgery	✓			
		Learn about common x-ray findings, common orthotics and prosthetics.	✓			
		Learn how to take written informed consent for Orthopaedics procedures.	✓			
		Learn to council patients for amputations and explaining care of amputation stump	✓			
		Learn referral of patients to other departments based on warning signs.	✓			

b. Practical II

Course: Core **Number of Hours: 270**

Credits: 6

COURSE OUTCOMES:

- Acquires knowledge about the disease, its diagnosis, its management, treatment and Clinical decision Making.
- To interact with the patients and collect detailed history about the patient.

COURSE CONTENT:

In this course students will be posted in various specialities in hospital and participate in journal clubs. The student will get experience in various aspects in diagnosis and management of diseases under the supervision of experienced professionals and is expected to work and contribute in the unit

SEMESTER IV

ADVANCED GASTROENTEROLOGY

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

- Explain the principles of recognition gastrointestinal diseases.
- Apply suitable methods to detect and manage common infections of gastro intestinal diseases
- Recognize the normal anatomical structures on a flat plate (KUB), CT of the abdomen, upper and lower gastrointestinal series, plus imaging studies of the hepatobiliary system
- Discuss the indications for surgery and its management in the more commonly encountered gastrointestinal disorder

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit I:Esophagus	**5 hours**	1.1 Basic anatomy, histology and physiology				15	LE
		1.2 Congenital anomalies	✓				
		1.3 Motility of the esophagus and motor disorders	✓				
		1.4 Mechanism of deglutition and dysphasia		✓			
		1.5 Approach to a patient with dysphasia	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		1.6 Tumors of the esophagus	✓				
		1.7 Esophageal webs, membranes and diverticulum		✓			
		1.8 Management of benign and malignant esophageal strictures		✓			
		1.9 Infectious diseases of the esophagus		✓			
		1.10 Foreign bodies in the esophagus and stomach	✓				
		1.11 Esophageal perforation	✓				
Unit II Stomach	**5 hours**	2.1 Anatomy, histology, functions		✓		15	LE & SE
		2.2 Physiology of acid and bicarbonate secretion in health and diseases	✓				
		2.3 Defence mechanisms against acid and pepsin					
		2.4 Gastroduodenal motor function in health and diseases.	✓				
		2.5 Helicobacter pylori infection	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		2.6 Peptic ulcer, surgery, complications	✓				
		2.7Gastric hypersecretory states including Zollinger-Ellison syndrome		✓			
		2.8 Post gastrectomy complication	✓				
		2.9 Tumors of the stomach		✓			
		2.10 Diverticula and hernia of the stomach	✓				
Unit III: Small Intestine	**7 hours**	3.1Anatomy, blood supply, histology Motility of the small intestine	✓			10	SE
		3.2 Congenital anomalies					
		3.3 Malabsorption syndromes Pathophysiology, manifestations and approach					
		3.4 Celiac sprue		✓			
		3.5 Infection related diseases (Intestinal microflora in health and diseases, Tropical sprue, Whipple's	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		disease Infectious diarrhoea and food poisoning, parasite diseases)					
		3.6 Small intestinal ulcers -short bowel syndrome and intestinal transplantation.		✓			
		3.7 Eosinophilic gastroenteritis	✓				
		3.8 Food allergies		✓			
		3.9 Malrotation of the gut	✓				
		3.10 Management of diarrhoea					
		3.11 GI lymphomas					
		3.12 Small intestinal tumors					
		3.13 Small intestinal transplantation		✓			
Unit IV: Colon	**6 hours**	4.1 Basic anatomy blood supply, histology and functions -Motility of the colon	✓			20	LE, SE
		and disorders of motility					

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		4.2 congenital anomalies-Megacolon					
		4.3 Constipation -. Colonic pseudo-obstruction-Faecal incontinence -. antibiotic associated diarrhoea		✓			
		4.4 Inflammatory bowel disease a.- Ulcerative colitis Crohn's disease c- Indeterminate colitis d- Ileostomies and its management - Diverticular disease of the colon	✓				
		4.5Radiation entero-colitis	✓				
		4.6 Colonic polyps and polyposis syndromes	✓				
		4.7 Malignant diseases of the colon	✓				
		4.8 Other inflammatory diseases of colon including					
		4.8.1 Solitary rectal ulcer syndrome	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		4.8.2 Diversion colitis	✓				
		4.8.3 Collagenous and microscopic colitis		✓			
		4.8.4 Nonspecific ulcerations of the colon	✓				
		4.8.5 Malakoplakia		✓			
		4.8.6 Pneumatoses cystoids intestinalis		✓			
		4.9 Haemorrhoids		✓			
		4.10 Diseases of the anorectum		✓			
Unit V: Pancreas	**6 hours**	5.1Anatomy, physiology, blood supply, developmental anomalies	✓			10	SE
		5.2Physiology of the pancreatic secretion		✓			
		5.3Pancreatic function tests		✓			
		5.4 Acute pancreatitis	✓				
		5.5 Recurrent acute pancreatitis	✓				
		5.6 Chronic pancreatitis	✓				
		5.7 Malignancies of the pancreas (Exocrine and endocrine)	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		5.8 Cystic fibrosis and other childhood disorders of the pancreas	✓				
		5.9 Hereditary pancreatitis		✓			
		5.10 Pancreatic transplantation	✓				
Unit VI: Biliary Tree	**6 hours**	6.1 Anatomy, Physiology - Physiology of bile formation and excretion	✓			10	LE
		6.2Enterohepatic circulation	✓				
		6.3 Bilirubin metabolism.	✓				
		6.4 Approach to a patient with jaundice	✓				
		6.5 Gallstones, its complications, and management	✓				
		6.6Acute acalculous cholecystitis	✓				
		6.7 Miscellaneous disorders of the gallbladder	✓				
		6.8 Acute cholangitis	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		6.9 Benign biliary structure	✓				
		6.10 Benign and malignant neoplasms of the biliary system.		✓			
		6.11 Endoscopic management of biliary obstruction.	✓				
		6.12 Motility and dysmotility of the biliary system and sphincter of Oddi dysfunction		✓			
		6.13 Congenital diseases of the biliary systems	✓				
Unit VII: Liver	**6 hours**	7.1 Anatomy, physiology, blood supply-Functions of the liver	✓			10	SE, LE
		7.2 Microcirculation of liver - Liver function tests-		✓			
		7.3 Portal hypertension	✓				
		7.3.1 Extrahepaticportosplenic vein obstruction	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		7.3.2 Non cirrhotic portal fibrosis	✓				
		7.3.3 Cirrhosis	✓				
		7.4 Acute viral hepatitis -Chronic hepatitis -Fulminant hepatic failure	✓				
		7.5 Subacute hepatic failure -Cirrhosis of liver - Ascites	✓				
		7.6 Hepatorenal syndrome- Autoimmune liver disease - Metabolic liver disease- Sclerosing cholangitis- primary and secondary	✓				
		7.7 Primary biliary cirrhosis- Hepatic venous outflow tract obstruction	✓				
		7.8 Fibrocystic diseases of the liver		✓			
		7.9 Wilson's disease	✓				
		7.10Hemochromatosis		✓			
		7.11Liver in porphyria		✓			
		7.12 Hepatic tumors	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		7.13 Infections of the liver	✓				
		7.14 Liver in pregnancy	✓				
		7.15 Liver in congestive heart failure	✓				
		7.16 Liver biopsy	✓				
		7.17 Liver transplantation and artificial liver support	✓				
Unit VIII: Peritoneum and Retroperitoneum	**4 hours**	8.1 Ascites	✓			10	SE
		8.2 Chronic peritonitis	✓				
		8.3 Budd-Chiari syndrome		✓			
		8.4 Malignant ascites	✓				
		8.5 Diseases of the retroperitoneum	✓				

Recommended books

1. Floch MH. Netter's gastroenterology. Elsevier Health Sciences; 2019 Jan 18.
2. Jacobson IM, Cacoub P, Dal Maso L, Harrison SA, Younossi ZM. Manifestations of chronic hepatitis C virus infection beyond the liver. Clinical Gastroenterology and Hepatology. 2010 Dec 1;8(12):1017-29.

3. Hawkey CJ, Bosch J, Richter JE, Garcia-Tsao G, Chan FK, editors. Textbook of clinical gastroenterology and hepatology. John Wiley & Sons; 2012 May 21.

ONCOLOGY

Course: Core

Credits: 3 **Number of Hours: 45**

COURSE OUTCOMES:

- Explain the prevention, screening and early detection of cancer.
- Describe the epidemiology, etiology, pathophysiology and diagnostic assessment of oncological disorders of various body systems
- Describe the psychosocial effects of cancer on patients and families.
- Demonstrate skill in administering/assisting in various treatment modalities used for patients with cancer

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit I: Role of the medical oncology physician assistant	**2 hours**	1.1 Standards of care		✓		10%	LE, SE
		1.2 Standards of professional performance	✓				
		1.3 Evidence-based practice	✓				
		1.4 Clinical practice	✓				
Unit II: Introduction To Oncology:	**4 hours**	2.1 Pathophysiology, epidemiology	✓			10%	LE, SE
		2.2 Classification of malignancies (Pathology)		✓			

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		2.3 Diagnostic modalities in cancer	✓				
		2.4 Principles of management	✓				
		2.5 Importance of follow-up		✓			
		2.6 Psychosocial impact and consequences of cancer diagnosis and treatment		✓			
Unit III: Principles of Cancer management	**4 hours**	3.1 surgical oncology	✓			10%	LE, SE
		3.2 Medical Oncology	✓				
		3.3 Radiation Oncology	✓				
		3.4 Biologic Therapy		✓			
Unit IV: Pharmacology of Cancer Biotherapeutics	**5 hours**	4.1 Interforne interlukins		✓		10%	LE, SE
		4.2 hormonal therapy	✓				
		4.3 differentiating agents		✓			
		4.4 monoclonal antibodies	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		4.5 anti-angiogenic factors.	✓				
Unit V: Cancer Diagnosis	**2 hours**	5.1 Molecular pathology and Cytology	✓			5%	LE, SE
		5.2 Imaging, Endoscopy	✓				
		5.3 Laparoscopy	✓				
Unit VI: Specialised techniques	**3 hours**	6.1 Minimal access surgery	✓			10%	LE, SE
		6.2 Vascular access		✓			
		6.3 Isolated perfusion		✓			
		6.4 Intensity modulated radiation therapy.	✓				
Unit VII: Systemic Oncology	**10 hours**	7.1Head and Neck Cancer				15%	LE, SE
		7.2 Lung Cancer					
		7.3 Mediastinal neoplasm		✓			
		7.4 Gastrointestinal tract cancer	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		7.5 Cancers of Genitourinary system					
		7.6 Gynaecologic cancer					
		7.7 Breast cancer					
		7.8 Endocrine Malignancies					
		7.9 Musculoskeletal turnouts		✓			
		7.10Mesotheloma		✓			
		7.11 Cancer of the skin	✓				
		7.12 Malignant Melanoma					
		7.13 Central nervous system malignancies					
		7.14 Paediatric malignancies					
		7.15 Lymphomas and leukemias					
Unit VII: Infection in the cancer patient	**2 hours**					5%	LE, SE
	4 hours	9.1 Pain management	✓			10%	LE, SE

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit IX: Supportive care and quality of life		9.2 Nutritional support	✓				
		9.3 Sexual problems		✓			
		9.4 Genetic counseling	✓				
		9.5 Psychological issues		✓			
		9.6 Community resources		✓			
		9.7Care of the terminally ill patient	✓				
Unit X: Adverse effects of treatment	**6 hours**	10.1 Nausea and vomiting	✓			10%	LE, SE
		10.2 Oral complications		✓			
		10.3 Pulmonary toxicity	✓				
		10.4 Cardiac toxicity	✓				
		10.5 Hair loss	✓				
		10.6 Gonedal dysfunction	✓				
		10.7 Second cancers	✓				
		10.8 Miscellaneous toxicity	✓				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit xi: Rehabilitation of the cancer patient	**3 hours**					5%	LE, SE

LE– Long Essay, SE – Short Essay

Recommended Books:

- Seifter EJ. Cancer: Principles and Practice of Oncology, Vincent T. DeVita, Jr., Samuel Hellman, Steven A. Rosenberg, eds. Philadelphia: Lippincott-Raven Publishers, 1997.3125 pp., illus. $199. ISBN 0-397-51573-4.
- McGee R, Kufel TJ, Janeira LF, Hoffman J, Herrell J. The Bookshelf. Chest. 1998 Nov 1;114(5):A-16.

CLINICAL SKILL-IV

Practical I

Course: Core

Credits: 4 **Number of Hours: 120**

COURSE OUTCOMES:

- To familiarize with different investigations (Imaging and Laboratory)
- To understand about the diagnosing of illnesses in adults based on the analysis of history, physical examination and investigative work up
- Recognize and identify the various neurological and ortho problems
- Institute diagnostic, therapeutic, rehabilitative and preventive measures to provide holistic care to the patient
- Take detailed history, perform full physical examination and make clinical diagnosis, perform relevant investigative and therapeutic procedures
- Interpret important imaging and laboratory results

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
Unit -I	120 Hours	Possess complete Clinical Diagnostic Skills for the recognition of common Nervous system diseases	✔			100	
		Possess a complete knowledge of all the commonly used Neurophysiological diagnostic Tests like Electroencephalography,	✔				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		Electroneurography, Electromyography, Cerebral evoked potentials.					
		Acquire skills in the interpretation of special investigations such as Polysomnography, Video EEG monitoring, EEG-Telemetry, autonomic function tests, Transcranial Doppler tests	✔				
		Acquire skills in interpretation of common neuroimaging investigations such as CT scanning, MRI scanning, MR and Digital subtraction angiography, Myelography, MR spectroscopy and Single Photon Emission Computerised Tomography	✔				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		Acquire skills in administering invasive procedures such as lumbar puncture, intrathecal drug administration, CSF manometry; assisting in digital subtraction angiography and intraarterial thrombolysis; and Nerve and muscle biopsy and their interpretation of relevant histopathology	✔				
		Bedside history taking in ward.	✔				
		Assisting procedures in Operation theatre and casualty.	✔				
		Examine indoor (medical; preoperative and postoperative) patients.	✔				
		Learn examination, principles of treatment and techniques of traction, wound care and splintage	✔				
		Attending ward rounds	✔				

Unit	T/L	Contents/SLOs	Must Know	Good to know	Desirable to know	Weightage in %	Types of Questions
		Learn plaster application, post plaster care.	✔				
		Learn to explain prognosis of fractures/ diseases to patients posted for surgery	✔				
		Learn about common x-ray findings, common orthotics and prosthetics.	✔				
		Learn how to take written informed consent for Orthopaedics procedures.	✔				
		Learn to council patients for amputations and explaining care of amputation stump	✔				
		Learn referral of patients to other departments based on warning signs.	✔				

b. Practical II

Course: Core **Number of Hours: 270**

Credits: 6

COURSE LEARNING OBJECTIVE:

- Acquires knowledge about the disease, its diagnosis, its management, treatment and Clinical decision Making.
- To interact with the patients and collect detailed history about the patient.

COURSE CONTENT:

In this course students will be posted in various specialities in hospital and participate in journal clubs. The student will get experience in various aspects in diagnosis and management of diseases under the supervision of experienced professionals and is expected to work and contribute in the unit

Dissertation

Course: Core

Credits: 12

Each candidate is required to carry out dissertation on a selected topic under the guidance of a recognized post graduate teacher after the submission of the synopsis.

The topic for the Dissertation should be chosen based on an area of interest. The aim of the dissertation is to enable the student to gain an in-depth insight into a particular department or topic chosen for study.

The synopsis shall be presented to the Board of Studies for acceptance. If found suitable shall register the dissertation topic. No change in the dissertation topic or guide shall be made without prior approval of the University.

Every candidate shall submit the synopsis containing particulars of proposed dissertation within nine months from the date of commencement of the course.

The dissertation shall be written under the following headings:

- Introduction
- Objectives of study
- Review of literature
- Materials and Methods
- Results
- Discussion
- Conclusion
- Recommendation
- Summary
- Bibliography
- Annexure

The written text of Dissertation should be neatly typed in double line spacing on one side of paper (A4 size) and should be bound, Spiral binding should be avoided. A declaration by the

candidate that the work was done by him/her shall be included. The co-guide (where ever applicable), guide, head of the department and head of the institution shall certify the bonafide of the dissertation.

Two copies of the dissertation shall be submitted to the university through proper channel along with a soft copy (CD), three months before the final examinations. It shall be assessed by two examiners appointed by the university, one internal and one external.100 marks shall be awarded for the Dissertation.

Acceptance of the dissertation is a pre-requisite for a candidate to be eligible to appear in the final examination.

Annexures:

Annexure I - Question Paper layout for theory examinations

Annexure II – Logbook template

Annexure III – Journal Club evaluation checklist

Annexure IV – Assignment guideline

Annexure V - Seminar Assessment Rubric Template

Annexure VI – OSPE/OSCE checklist