REGULATIONS AND CURRICULUM GOVERNING

B.Sc. RESPIRATORY THERAPY PROGRAM

Implemented in Academic Year 2016-17

Revised in 2018

Amended up to 2025

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



Deralakatte, Mangalore, Karnataka.

YENEPOYA
(DEEMED TO BE UNIVERSITY)

NOTIFICATION FROM THE UNIVERSITY

Sl. No.	ACM with date	BOM/BOS with date	Decisions/Approvals
1.	25th ACM/ 22.08.2016	-	Regulation & Syllabus of B.Sc. Respiratory Care Technology course is approved.
2.	27th ACM/ 09.01.2017	-	Starting of B. Sc. Respiratory Care Technology course approved the revised curriculum from the academic year 2016-17.
3.	32nd ACM/ 11.08.2018	-	Amendment for the revision of syllabus of B.Sc. Respiratory Care Technology course from the academic year 2018-19.
4.	38th ACM/ 27.04.2020	49th BOM/ 30.04.2020	All the Undergraduate programs offered by the Faculty of Allied and Healthcare Professionals approved for the Credit Based Semester System from the Academic year 2020-21.
5.	42nd ACM/ 22.03.2021	53rd BOM/ 23.03.2021	Modification in the nomenclature of B.Sc. B.Sc. Respiratory Care Technology to Bachelor of Science in Respiratory Therapy course from the academic year 2021-22.
6.	44th ACM/ 05.10.2021	55th BOM/ 05.10.2021	Proposal for Introduction of Choice Based Credit System in all the Undergraduate programs offered by the Yenepoya Institute of Allied Health Sciences from the academic year 2021-22.
7.	49th ACM/ 13.12.2022	60th BOM/ 14.12.2022	Curriculum of B.Sc. –M.Sc. Integrated UG –PG programme with NEP regulations have approved for the implementation from the Academic Year 2022-23.
8.	51st ACM/ 16.05.2023	62nd BOM/ 14.06.2023	Introduction of New National Credit Framework (NCRF) for all undergraduate programme under the faculty of Allied & Healthcare Professions from the academic year 2023-24.
9.	61st ACM/ 13.02.2025	-	The amendment in the syllabus of the course “Pathology & Microbiology II” of the B.Sc. Technology Program was Approved.
10.	64th ACM/ 14.08.2025	-	Implementing Ability Enhancement Course “English and Communication” in all B.Sc. Technology Programs under the Faculty of Allied & Healthcare Professions was approved.

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1. Preamble

Health care sector has become one of the largest employment generation sectors in India and abroad. Rapidly changing and expanding horizon of the health care sector demands formal training programs in all its allied areas. Advanced complex instrumentation & equipment require technologists not only to operate but also to care & 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 the healthcare sector and in accordance with Ministry of Human Resource Development (HRD), Govt. of India education system introduced National higher education quality framework (NHEQF), the program is designed in a way the curriculum is student centric having flexible choice-based credit system with value based holistic multidisciplinary approach.

Respiratory Therapy is a specialized healthcare professional trained in cardiopulmonary sciences in order to work diagnostically and therapeutically with people suffering from cardiopulmonary and related disorders. Respiratory therapists work in hospitals in the intensive care units (Adult, Pediatric, and Neonatal), on hospital floors, in Emergency Departments, in Pulmonary Functioning laboratories (PFTs), sleep labs, and rehabilitation and home care settings; and are able to perform various non-invasive and invasive procedures Choice based Credit System is a flexible system of learning. The distinguishing features of CBCS are following:

- It permits students to learn at their own pace.
- Choose Electives from a wide range of Elective courses offered by the other departments/university.
- Undergo additional courses acquire more than the required number of credits.
- Adopt an Inter-disciplinary and Intra-disciplinary approach in learning.
- Make best use of the available expertise of the faculty across the departments or disciplines.
- Has an inbuilt evaluation system to assess the analytical and creative skills of students in addition to the conventional domain knowledge assessment pattern.

2. Definitions

2.1 Academic Year

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

2.2 Semester System / Choice Based Credit System

The semester system accelerates the teaching – learning process. The CBCS provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice-based credit system provides a cafeteria type approach in which the students can take courses of their choice, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning.

An academic year shall consist of two semesters:

Odd Semester 1st, 3rd, 5th& 7th	September/October to February/March
Even semester 2nd, 4th, 6th& 8th	March/April to August/September

2.3 Course

Usually referred to, as “papers” is a component of a programme. The courses shall define learning objectives and learning outcomes. A course shall comprise lectures/ tutorials/ laboratory work/ field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these. The courses can be of the following types i.e. Core, Ability Enhancement, Skill enhancement, Value added courses, Multidisciplinary Electives and Internship.

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 in a 15-20week schedule: One credit =1 hour 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.

	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Rotation (CR)
1 Credit	1 Hour	1 Hour	2 Hours	3-5 Hours

Credit Hours for different types of courses:

- Each course may have only a lecture component or a lecture and tutorial component or a lecture and practicum component or a lecture, tutorial, and practicum component, or only practicum component. For example, a three-credit lecture course in a semester means three one-hour lectures per week with each one-hour lecture counted as one credit. In a semester of 15 weeks duration, a three-credit lecture course is equivalent to 45 hours of teaching.
- One credit for tutorial work means one hour of engagement per week. In a semester of 15 weeks duration, a one-credit tutorial in a course is equivalent to 15 hours of engagement.
- A one-credit course in practicum or lab work, community engagement and services, and fieldwork in a semester mean two-hour engagement per week. In a semester of 15 weeks duration, a one-credit practicum in a course is equivalent to 30 hours of engagement.
- A one-credit of Seminar or Internship or Studio activities or Field practice/projects or Community engagement and service means two-hour engagements per week. Accordingly, in a semester of 15 weeks duration, one credit in these courses is equivalent to 30 hours of engagement.
- A course can have a combination of lecture credits, tutorial credits, and practicum credits. For example, a 4–credit course with three credits assigned for lectures and one credit for practicum shall have three 1-hour lectures per week and one 2-hour duration field-based learning/project or lab work, or workshop activities. In a semester of 15 weeks duration, a 4-credit course is equivalent to 45 hours of lectures and 30 hours of practicum. Similarly, a 4 –credit course with 3- credits assigned for lectures and one credit for tutorial shall have three 1-hour lectures per week and one 1-hour tutorial per week. In a semester of 15 weeks duration, a four-credit course is equivalent to 45 hours of lectures and 15 hours of tutorials.
- Experiential learning credit is equal to 3-hour duration per week. For example, 1 credit for experiential learning will mean 45 hours of learning. The credits assigned to

the course is indicated as L: T: P format. For example, for a 4credit course format could be: 4:0:0 or 1:2:1 or 3:1:0 or 0:0:4etc.

2.5Programme

An educational program leading to award of a degree, diploma or certificate. The following types of courses/activities constitute the programmes of study. Each of them will require a specific number of hours of teaching/guidance and laboratory/studio/workshop activities, field-based learning/projects, internships, and community engagement and service.

a. **Lecture courses:** Courses involving lectures relating to a field or discipline by an expert or qualified personnel in a field of learning, work/vocation, or professional practice.

b. **Tutorial courses:** Courses involving problem-solving and discussions relating to a field or discipline under the guidance of qualified personnel in a field of learning, work/vocation, or professional practice.

c. **Practicum or Laboratory work:** A course requiring students to participate in a project or practical or lab activity that applies previously learned/studied principles/theory related to the chosen field of learning, work/vocation, or professional practice under the supervision of an expert or qualified individual in the field of learning, work/vocation or professional practice.

d. **Seminar:** A course requiring students to participate in structured discussion/conversation or debate focused on assigned tasks/readings, current or historical events, or shared experiences guided or led by an expert or qualified personnel in a field of learning, work/vocation, or professional practice.

e. **Internship:** A course requiring students to participate in a professional activity or work experience, or cooperative education activity with an entity external to the education institution, normally under the supervision of an expert of the given external entity. A key aspect of the internship is induction into actual work situations.

Internships involve working with local industry, government or private organizations, business organizations, artists, crafts persons, and similar entities to provide opportunities for students to actively engage in on-site experiential learning.

f. **Studio activities:** Studio activities involve the engagement of students in creative or artistic activities. Every student is engaged in performing a creative activity to obtain a specific outcome. Studio-based activities involve visual- or aesthetic focused experiential work.

g. **Field practice/projects:** Courses requiring students to participate in field-based learning/projects generally under the supervision of an expert of the given external entity.

h. **Community engagement and service:** Courses requiring students to participate in field-based learning/projects generally under the supervision of an expert of the given external entity. The curricular component of 'community engagement and service' will involve activities that would expose students to the socio-economic issues in society so that the theoretical learnings can be supplemented by actual life experiences to generate solutions to real-life problems.

i. **Experiential learning activities:** Field project work / Day out learning activities etc are considered as experiential activities.

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 Letter Grade

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

2.9 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.

2.10 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.

2.12 Academic Bank Account

Means an individual account with the Academic Bank of Credits opened and operated by a student, to which all academic credits earned by the student from course(s) of study are deposited, recognized, maintained, accumulated, transferred, validated or redeemed for the purposes of the award of degree/diploma/certificates etc. by an awarding institution.

2.13 Academic Bank of Credits

Means the provision for innovative and interchangeable curricular structures to enable creative combinations of Courses or Programmes in Disciplines of study leading to Degree or Diploma or Post Graduate Diploma or Certificate of Study offering multiple entry and multiple exit facilities, while removing rigid curricular boundaries and creating new possibilities of life-long learning.

2.14 Credit Accumulation

Means the facility created by Academic Bank of Credits in the Academic Bank Account opened by students in order to transfer and consolidate the credits earned by them by undergoing Courses.

2.15 Credit Redemption

Means the process of commuting the accrued credits in the Academic Bank Account of the students maintained in ABC for the purpose of fulfilling the credits requirements for the award of Degrees or Diplomas or Certificates or Course work for Ph.D. programme etc., by the registered degree-awarding Higher Educational Institutions.

2.16 Credit Transfer

Means the mechanism by which the Registered Higher Educational Institutions are able to receive or provide prescribed credits to individual Academic Bank Accounts in adherence to the University Grants Commission credit norms for the 'course/s' undertaken by students enrolled in any Registered Higher Education Institution within India.

2.17 Curricular components of the B.Sc. Respiratory Therapy Programme

Courses in the programme may be of the following types:

a. Core Course
b. Skill Enhancement Courses (SEC)
c. Ability Enhancement Courses (AEC)
d. Value Added Courses (VAC)
e. Multidisciplinary Elective (ME)
f. Internship

a. Core Course (CC): A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course. This is the course which is the major disciple/subject having main focus and degree will be awarded in this

discipline. This core course provides opportunity for our student to pursue in depth study of a particular subject or discipline hence, it is compulsorily studied by a student as a core requirement to complete the program of study in a said discipline. Every Core course shall be restricted to a minimum of 4 credits.

b. **Skill Enhancement Course (SEC):** SEC courses are aimed at imparting practical skills, hands- on training, competencies etc to enhance the skill-based knowledge and thus the employability of the students.

c. **Ability Enhancement Courses (AEC):** These are the courses which aim to provide the students the competency in a modern Indian language (MIL) and in the English language with special emphasis on language and the communication skills. The courses aim at enabling the students to acquire and demonstrate the core linguistic skills, including critical reading and expository and academic skills, that helps students articulate their arguments and present their thinking clearly and coherently and recognize the importance of language as a mediator of knowledge and identity. The courses will also emphasize the development and enhancement of skills such a communication, and the ability to participate/ conduct discussion and debate.

d. **Value Added Courses (VAC):** These are the courses relating to understanding India, environmental science/ education, Health and Wellness etc.

   i. **Constitution of India:** The course aims at enabling the students at acquire and demonstrate the knowledge and understanding of contemporary India with its historical perspective, the basic framework of the goals and policies of National development, and the constitutional obligations with special emphasis on constitutional values and fundamental rights and duties.

   ii. **Environmental Studies:** The course aims to equip the students with the ability to apply the acquired knowledge, skills, attitudes, and values require to take appropriate actions for mitigating the effects of environmental degradation, climate change, and pollution, effective waste management, conservation of biological diversity, management of biological resources, forest and wild life conservation, and sustainable development and living.

iii. **Human Rights & Gender equity:** The Course emphasis understanding social justice issues and roles of human rights in promoting equitable society including international, national perspective, contemporary issues with this holistic coverage and relevance to today's world.

iv. **Medical Ethics:** The course deals with ethics involving fundamental and moral issues related to decision making while performing professional practice. It guides the students in systematic and rational way of working through dilemmas and to determine the best course of action in their field of practice.

e. **Multidisciplinary Electives (ME):** These courses are intended to broaden the intellectual experience and form part of liberal arts and science education. Students are not allowed to choose or repeat courses already undergone at the higher secondary level (Twelfth class). The courses relating to any of the broad discipline given below will come under this category.

i. **Natural and Physical Sciences:** Students can choose basic courses from disciplines such as natural science, for example, Biology, Botany, Zoology, Biotechnology, Biochemistry, Chemistry, Physics, Biophysics, Astronomy and Astrophysics, Earth and Environmental sciences, etc.

ii. **Mathematics, Statistics and computer applications:** Courses under this category will facilitate the students to use and apply tools and techniques in their major and minor disciplines. The course may include training in programming software like python among others and application software like STATA, SPSS, TALLY, etc. Basic courses under this category will be helpful; for science and social science in data analysis and the application of quantitative tools.

iii. **Library, Information, and Media Sciences:** Courses from this category will help the students to understand the recent developments in information and media science (journalism, Mass Media, and Communication)

iv. **Commerce and Management:** Courses include business management, accountancy, financial institutions, Fintech, etc.,

v. **Humanities and Social Sciences:** The courses relating to social sciences, for example, Anthropology, Communication and Media, Economics, History, Linguistics, Political science, Psychology, Social work, Sociology, etc. will enable students to understand the individuals and their social behavior, society and nation. Students be introduced to survey methodology and available large – scale databases for India. The courses under humanities include for example, Archeology, History, Comparative Literature, Arts and Creative Expressions, Creative writing and literature, language(s), philosophy etc., and interdisciplinary courses relating to humanities. The list of courses that can include interdisciplinary subjects such as cognitive science, environmental science, gender studies, global environment and health, international relations, political economy and development, sustainable development, Women's and gender studies, etc. will be useful to understand society.

The Multidisciplinary elective offered by Yenepoya (Deemed to be) University includes:

i. **First Aid and Basic Life Support (BLS):** This Course deals with training the students to be a first responder when there are medical or traumatic emergencies.

ii. **Yoga:** The course develops a comprehensive understanding of yoga, including its history, various schools, practices, and their application in daily life, while also recognizing its potential for personal well-being, professional growth, and promoting positive health.

iii. **Vermitechnology:** This category of course will help students to gain skills in using worms to convert decomposing food waste into nutrient-rich fertilizer in simple, inexpensive and energy efficient way.

iv. **Positive Psychology:** The course will enable students to enrich themselves to thrive on the belief that people want to lead meaningful and fulfilling lives, cultivate what is best within them, and enhance their experiences of love, work, and play.

v. **National Service Scheme (NSS):** Students can choose NSS to understand the basic concept of NSS, to identify the needs and problems of the community in which they work and to gain skills in mobilizing community participation.

vi. **Lifestyle Management:** This course will help students to learn to achieve health goals through lifestyle and behavior adjustments by creating healthy habits as well as stress management.

vii. **Youth Red Cross:** The course deals with providing knowledge on Youth Red Cross volunteer ship and identifying the role of youth in humanitarian service. It also enables youth to promote national and international understanding by using international link of the movement.

viii. **Jeevan Kaushal:** University grant commission identified 4 modules on life skills (Jeevan Kaushal), the skills that required through our life. Jeevan Kaushal courses such as Communication skills, Professional Skills, Leadership and Management skills and Universal Human Values which will help students in developing personal competencies that helps to deal with challenges of life effectively thereby realizing his/her infinite potential as a human being.

ix. **Self – learning course:** In accordance with the UGC (Credit Framework for Online Learning Courses through SWAYAM) Regulation, 2021, New Delhi, dated 25th March 2021, and reference No.F.1-100/2016 (MOOCs/e-content), students are encouraged to augment their learning experience by opting for Massive Open Online Courses (MOOCs), Study Webs of Active Learning for Young Aspiring Minds (SWAYAM), and Coursera courses as part of the multidisciplinary elective.

- Yenepoya (Deemed to be University) will adhere to UGC regulations governing MOOCs/SWAYAM/Coursera courses, incorporating amendments as communicated by UGC over time. To facilitate the seamless completion of chosen courses, the department will appoint a designated course coordinator. The coordinator will guide and support students throughout the duration of the selected online courses.

- The evaluation process will adhere to predefined norms and parameters, which will be communicated in the course overview at the time of offering.
- In COURSERSA, the assessment is multifaceted and include quizzes or tests at the conclusion of each module, assignments or projects demonstrating the practical application of concepts, active participation in discussion forums, and peer-reviewed assessments. The culmination of each course involves final quizzes or capstone projects tailored to the course's content. Upon successful completion, students receive an online certificate, Yenepoya (Deemed to be University) will integrate the acquired credits into the student's official marks sheet.
- In SWAYAM, Assessment will include formative continuous online assessments and end-of-course proctored exams, all of which are mandatory for successful completion by the student. Yenepoya (Deemed to be University) will integrate the marks or grade achieved by the student, conveyed by the Host Institution through the PI of the SWAYAM course, into the student's official marks sheet. These marks contribute to the final award of the degree conferred by the University.

f. Internship: The internship time period provides the candidate the opportunity to develop confidence and increased skill in simulation and treatment delivery. Candidate will demonstrate competence in basic and intermediate procedures and will observe the advanced and specialized treatment procedures. The candidate will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The candidate is expected to work for minimum 8 hours per day and this may be more depending on the need and the healthcare setting.

3. Eligibility for Admissions

To be eligible for admission in B. Sc Respiratory Therapy, a candidate should have passed two-years Pre-University examination/ Pre-Degree examination/ two years after ten years of schooling or its equivalent as recognized by the Yenepoya (Deemed to be) University with Physics, Chemistry and Biology as principal courses of study.

Candidate needs to secure 40% or above marks in the qualifying examination to be eligible for admission. For SC/ST/OBC candidates minimum marks required in the qualifying exam is 35% marks.

4. Duration of the Program

The duration of the programme shall extend over 8 semesters (three academic years with one year internship) each semester comprising minimum of 15 weeks with the minimum of 90 actual working days of instruction in each semester. The successful completion of the Undergraduate program, along with internship as applicable will lead to Bachelor's degree in Respiratory Therapy (B.Sc. RT).

5. Maximum Period for Completion of Programme

A candidate shall complete six semesters (Three Years) programme within Six years from the date of admission. Hence, the maximum period for completion of the programme is seven years.

6. Aim of the Program

To prepare competent entry-level respiratory therapy professionals with comprehensive scientific knowledge in cardiopulmonary sciences, capable of safely assessing, diagnosing, and managing patients with respiratory and related conditions across acute, critical care, and community settings, while demonstrating ethical practice, effective communication, collaborative functioning within multidisciplinary healthcare teams, and a commitment to lifelong learning and community-oriented health promotion.

7. Outcomes of the Program

7.1 Program Outcome (PO): (Knowledge – K, Skill – S, Attitude – A, Communication – C)

Upon successful completion of the undergraduate course, students will have developed a broad knowledge in the field of evaluation, diagnosis and management of different conditions of the cardiopulmonary system.

In particular they will be:

PO 1: Ability to function effectively in the health care setting as a member of the healthcare team. (S, A, C)

PO 2: Knowledge and application of cardiopulmonary diagnosis and monitoring. (K, S)

PO 3: Knowledge and application of cardiopulmonary pharmacology and pathophysiology. (K, S)

PO 4: Management of respiratory care plans for adult, neonatal and pediatric patients. (K, S)

PO 5: Demonstrate techniques to maintain the personal hygiene needs of oneself and the patient. (S, A)

PO 6: The ability to communicate effectively in oral, written and visual forms. (C)

PO 7: Ability to stay calm and make the right decisions in adverse conditions. (S, A)

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

PO 8: Knowledge of the respiratory care code of ethics and ethical and professional conduct. (K, A)

PO 9: Knowledge and application of mechanical ventilation and therapeutics. (K, S)

PO 10: Ability to perform BLS & ACLS. (K, S)

7.2Program Structure

	Broad category of course	**Hours / Credits**	**Course (Title)**
1.	**Discipline-Specific Courses**		
a)	Theory	**I Semester**	
		60 Hours / 4 Credits	Human Anatomy & Physiology I
		60 Hours / 4 Credits	Pathology & Microbiology I
		60 Hours / 4 Credits	Biochemistry
		60 Hours / 4 Credits	Introduction to Respiratory Profession
		II Semester	
		60 Hours / 4 Credits	Human Anatomy & Physiology II
		60 Hours / 4 Credits	Pathology & Microbiology II
		60 Hours / 4 Credits	Introduction to Respiratory Therapy Equipment
		60 Hours / 4 Credits	Cardiopulmonary Applied Anatomy & Physiology

	Broad category of course	Hours / Credits	Course (Title)
		III Semester	
		60 Hours / 4 Credits	General Pharmacology
		60 Hours / 4 Credits	Respiratory Therapy Science I
		60 Hours / 4 Credits	Patient Assessment & Diagnostics
		60 Hours / 4 Credits	Cardiopulmonary Disease I
		IV Semester	
		60 Hours / 4 Credits	Cardiopulmonary Pharmacology
		60 Hours / 4 Credits	Respiratory Therapy Science II
		60 Hours / 4 Credits	Cardiopulmonary Disease II
		60 Hours / 4 Credits	Mechanical Ventilation I
		V Semester	
		60 Hours / 4 Credits	Pulmonary Function Tests and Imaging
		60 Hours / 4 Credits	Mechanical Ventilation II
		60 Hours / 4 Credits	Essentials of Critical Care
		VI Semester	
		60 Hours / 4 Credits	Neonatal and Pediatric Respiratory Care
		60 Hours / 4 Credits	Cardiopulmonary Rehabilitation and Home Care
		60 Hours / 4 Credits	Sleep Medicine and Polysomnography
b)	Practical (SEC)*	-	-
c)	Clinical (SEC)*	**III Semester**	
		120 Hours / 4 Credits	Clinical Training I
		IV Semester	
		120 Hours / 4 Credits	Clinical Training II

	Broad category of course	Hours / Credits	Course (Title)
		V Semester	
		120 Hours / 4 Credits	Clinical Training III
		VI Semester	
		120 Hours / 4 Credits	Clinical Training IV
d)	Simulation-based (SEC)*	-	-
2.	**Curriculum Enrichment Courses**		
a)	Field Visit	-	-
b)	Community Posting	-	-
c)	Industry / Clinical Internship	**VII Semester**	
		40 Hours per week / 20 Credits	Internship I
		VIII Semester	
		40 Hours per week / 20 Credits	Internship II
d)	Research Project	-	-
3.	**Electives**		
a)	Discipline-Specific Electives	-	-
b)	Interdisciplinary Courses	45 Hours / 3 Credits per year	Coursera / Swayam / National Service Scheme / Red Cross

	Broad category of course	Hours / Credits	Course (Title)
c)	Ability Enhancement Courses • *Soft skills development* • *Language and communication skill development* • *Analytical skill development* • *Personality and professional development* • *Employability skill development*	**I Semester**	
		45 Hours / 3 Credits	English and Communication I
		30 Hours / 2 Credits	Kannada
		II Semester	
		45 Hours / 3 Credits	English and Communication II
d)	Value Added Courses	**II Semester**	
		30 Hours / 2 Credits	Constitution of India
		III Semester	
		30 Hours / 2 Credits	Human Rights & Gender Equity
		V Semester	
		30 Hours / 2 Credits	Biostatistics
		30 Hours / 2 Credits	Environmental Science
		VI Semester	
		30 Hours / 2 Credits	Medical Ethics
Total		**171 Credits**	

8. Attendance

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.

The HOD/Programme 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 Course wise

Teaching - Learning method	**Courses**
Experiential learning	Introduction to Respiratory Therapy Equipment Respiratory Therapy Science I & II Patient Assessment & Diagnostics Pulmonary Function Tests & Imaging Neonatal & Pediatric Respiratory Care Sleep Medicine & Polysomnography
Integrated/Inter-disciplinary learning	Cardiopulmonary Applied Anatomy & Physiology Patient Assessment & Diagnostics
Participatory learning	Patient Assessment & Diagnostics Respiratory Therapy Science I & II Essentials of Critical Care
Problem-solving methodologies	Cardiopulmonary Applied Anatomy & Physiology Patient Assessment & Diagnostics Cardiopulmonary Disease I & II Mechanical Ventilation I & II Sleep Medicine & Polysomnography

Teaching - Learning method	Courses
Self-directed learning	Introduction to Respiratory Therapy Equipment Cardiopulmonary Pharmacology
Patient-centric learning	Introduction to Respiratory Profession Cardiopulmonary Applied Anatomy & Physiology Respiratory Therapy Science I & II Cardiopulmonary Disease I & II Essentials of Critical Care Neonatal & Pediatric Respiratory Care Cardiopulmonary Rehabilitation & Home Care
Evidence-based learning	Cardiopulmonary Disease I & II Mechanical Ventilation I & II Pulmonary Function Tests & Imaging Cardiopulmonary Rehabilitation & Home Care Sleep Medicine & Polysomnography
The Humanities	Human Rights & Gender Equity
Project-based learning	Mechanical Ventilation I & II Pulmonary Function Tests & Imaging Cardiopulmonary Rehabilitation & Home Care Sleep Medicine & Polysomnography
Role-play	Introduction to Respiratory Profession Patient Assessment & Diagnostics Pulmonary Function Tests & Imaging Cardiopulmonary Rehabilitation & Home Care
Team-work	Introduction to Respiratory Profession Introduction to Respiratory Therapy Equipment Respiratory Therapy Science I & II Mechanical Ventilation I & II Essentials of Critical Care Neonatal & Pediatric Respiratory Care
Reflective writing	Introduction to Respiratory Profession

Teaching - Learning method	Courses
Any other (Simulation-Based Learning)	Patient Assessment & Diagnostics Respiratory Therapy Science I & II Mechanical Ventilation I & II Essentials of Critical Care Neonatal & Pediatric Respiratory Care Sleep Medicine & Polysomnography

10. Scheme of Examination

Evaluation of a course shall be done based on continuous internal assessment (CIA) mode followed by Semester End University Examination (SEE) for each core, SEC, AEC & VAC. The evaluation of Multidisciplinary elective offered by Yenepoya (Deemed to be) University shall be done based on formative assessment.

The components of CIA (Continuous Internal Assessment) may include sessional tests, Seminar, Assignment/ Social involvement and other activities as determined by the respective speciality.

There shall be examinations at the end of each semester ordinarily during February/March for odd semesters and during August/September for even semesters.

The SEE duration shall be 60 minutes for 25 marks paper and 120 minutes for 50 marks paper.

The various Formative assessment method include Assignments, reports, quizzes…

10.1 Examination Structure

The examination structure shall vary dep ending on the course, however, broadly divided as follows:

Examination / Assessment	Core / SEC	AEC (English, Kannada) / VAC
Continuous Internal Assessment	50 Marks	25 Marks
Semester End Examination	50 Marks	25 Marks
Total	100 Marks	50 Marks

10.2 Multidisciplinary Elective

Multidisciplinary elective will be assessed through continuous and comprehensive assessment throughout the Semester (50 Marks)

i. Evaluation and Certification of online courses:

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.

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).

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.

ii. 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.

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 this Yenepoya (Deemed to be University).

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

A candidate shall compulsorily complete total 9 Credits of Multidisciplinary courses.

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, 6 credits before fourth semester and 9 credits before sixth semester end examination.

A candidate who is desirous to add more credits shall be permitted to do so during the academic duration. Extra credits earned by a candidate shall be included in the marks card on submission of course completion certificate. However, it shall not be considered for awarding the Grade in the UG programme.

10.3 Parameters for Continuous Internal Assessment (CIA)

Internal Assessment Components	Core / SEC	AEC (English, Kannada) / VAC
Internal Assessment tests	20	10
Assignment	10	05
Continuous and comprehensive assessment	20	10
Total Marks	**50**	**25**

Assessment Methods:

1	Quiz	6	Role Play
2	Group Discussion	7	Peer to Peer Assessment
3	Open Book Exam	8	Mind Mapping
4	Think-Pair-Share	9	Minute paper
5	Presentations	10	Case Study

10.4 Question Paper Pattern for Core course (Internal Assessment & Semester End Examination)

	MAXIMUM MARKS = 50				**Duration**
Type of question	**Number of questions**	**To be Answered**	**Marks for each question**	**Total**	
LONG ESSAY TYPE	02	01	10	10	120 minutes
SHORT ESSAY TYPE	07	05	04	20	
SHORT ANSWERS	12	10	02	20	
			Total	**50**	

	MAXIMUM MARKS = 50				Duration
PART A					
Type of question	**Number of questions**	**To be Answered**	**Marks for each question**	**Total**	120 Minutes
LONG ESSAY TYPE	02	01	10	10	
SHORT ESSAY TYPE	02	01	05	05	
SHORT ANSWERS	06	05	02	10	
PART B					
LONG ESSAY TYPE	02	01	10	10	
SHORT ESSAY TYPE	02	01	05	05	
SHORT ANSWERS	06	05	02	10	
			Total	**50**	

10.5 Question Paper Pattern for Ability Enhancement Compulsory (AEC) Course

	MAXIMUM MARKS = 25				Duration
Type of question	**Number of questions**	**To be Answered**	**Marks for each question**	**Total**	60 minutes
ESSAY	05	03	05	15	
SHORT ANSWERS	07	05	02	10	
			Total	**25**	

10.6 Question Paper Pattern for Value Added (VAC) Course

	SUBJECTS HAVING MAXIMUM MARKS = 25				Duration
Type of question	**Number of questions**	**To be Answered**	**Marks for each question**	**Total**	
ESSAY	05	03	05	15	60 minutes
SHORT ANSWERS	07	05	02	10	
			Total	**25**	

10.7 Practical examination (SEC)

SI.NO	Components	Marks
1	Spotters	10
2	Case scenario/Stations	20
3	Viva Voce	20
Total Marks		50

Particulars of Practical, Viva-Voce

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

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

OSCE/OSPE- shall have minimum of 4 stations.

11. Eligibility to appear for University Examination

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.

Evaluation of a course shall be done based on continuous internal assessment (CIA) mode followed by Semester End University Examination (SEE) for each core, SEC, AEC & VAC.

The evaluation of Multidisciplinary elective offered by Yenepoya (Deemed to be) University shall be done based on formative assessment.

The components of CIA (Continuous Internal Assessment) may include sessional tests, Seminar, Assignment/ Social involvement and other activities as determined by the respective specialty.

The marks for CIA shall be 50% and SEE shall be 50%.

The minimum marks for CIA shall be 40% and SEE shall be 40% for a pass, but the minimum marks for pass per course shall be 50% CIA and SEE added together.

The HOD/Programme 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.

12. Criteria for Passing

The marks for CIA shall be 50% and SEE shall be 50%.

The minimum marks for CIA shall be 40% and SEE shall be 40% for a pass, but the minimum marks for pass per course shall be 50% CIA and SEE added together.

A candidate shall be declared to have passed the UG programme if he/she secures at least CGPA of 5.0 (Course Alpha-Sign Grade P) in the aggregate of both Internal Continuous Assessment and Semester End Examination.

The results of the candidates who have passed the sixth 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.

13. Grading and Classifications

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 six semesters and the corresponding overall alpha sign grade.

a. Letter Grades and Grade Points

i. The Deemed to be University would be following the absolute grading system, where the marks are compounded to grades based on pre-determined class intervals.

ii. The UGC recommended 10-point grading system with the following letter grades are given below:

Letter Grade	Marks	Grade Point
O (Outstanding)	90-100	10
A+ (Excellent)	80-89	9
A (Very Good)	70-79	8
B+ (Good)	60-69	7
B(Above Average)	55-59	6
P (Pass)	50-55	5
F (Fail)/ RA (Reappear)	Below 50	0
Ab (Absent)		0

*The Marks with 0.5 shall be rounded up to the next whole number.

iii. A student obtaining Grade RA/ Ab shall be considered failed and will be required to reappear in the end semester examination.

b. The Semester Grade Point Average (SGPA)

The performance of a student in a semester is indicated by a number called 'Semester Grade Point Average' (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses by the student during the semester.

For example, if a student takes five (Theory/Practical) in a semester with credits C1, C2, C3, C4 and C5 and the student's grade points in these courses are G1, G2, G3, G4 and G5, respectively, and then students' SGPA is equal to:

$$SGPA = \frac{C1G1 + C2G2 + C3G3 + C4G4}{C1 + C2 + C3 + C4}$$

The SGPA is calculated to two decimal points. It should be noted that, the SGPA for any semester shall take into consideration the F and ABS grade awarded in that semester. For example if a student has a F or ABS grade in program 4, the SGPA shall then be computed as:

$$SGPA=\frac{C1G1+C2G2+C3G3+C4\times Zero+C5G5}{C1+C2+C3+C4+C5}$$

c. Cumulative Grade Point Average (CGPA)

The CGPA is calculated with the SGPA of all the VI semesters to two decimal points and is indicated in final grade report card/final transcript showing the grades of all VI semesters and their courses. The CGPA shall reflect the failed status in case of F grade(s), till the course(s) is/are passed. When the program(s) is/are passed by obtaining a pass grade on subsequent examination(s) the CGPA shall only reflect the new grade and not the fail grades earned earlier. The CGPA is calculated as:

$$CGPA=\frac{C1S1+C2S2+C3S3+C4S4+C5S5+C6S6}{C1+C2+C3+C4+C5+C6}$$

where C1, C2, C3,…. is the total number of credits for semester I,II,III,…. and S1, S2, S3….is the SGPA of semester I,II,III,…..

Calculation of GPA & CGPA: An example (1st semester)

Program Code	Course	Credits (a)	Grade Obtained	Credit Value (b)	Grade Points (axb)
	Course 1	4	B	8	32
	Course 2	4	B	8	32
	Course 3	4	O	10	40
	Course 4	4	A	9	36
	Course 5	3	C	7	14
	Course 6	2	A	9	18
	Total	**21**	**-**	**-**	**172**

1st Semester GPA = Total Grade Points / Total Credits = 172 / 21 = 8.2

2nd Semester GPA = 7 with respect to 22 Credits

Then 1st Year CGPA = (8.2 x 21) + (7 x 22) / 21 + 22 = 7.6

14. Any other Information (Progression Criteria, Re-entry after break of the study, Evaluation of Answer Scripts, Internship)

14.1 Progression Criteria

- The students are allowed to carry over any number of courses till sixth semester. But student is eligible to appear for the End semester exam of sixth semester if he/she has cleared all the Courses both Core, AEC, SEC & VAC of first, second, third & fourth semesters. If student has any pending course of first to fourth semesters, he/she is not eligible to appear for the end semester exam of the sixth semester. However, Fifth semester courses are allowed to club with sixth semester end examination. But, all the Core, AEC, SEC & VAC of first to fourth semester should be completed to be eligible for sixth semester End Semester Examination.
- Candidate should clear all Courses (Core, AEC, SEC, VAC & ME) of all the semester, to be eligible to start the one year of mandatory internship.
- A fail in any one Course will mean the candidate has to reappear for the exam in that Course only.
- A candidate who passes the semester examinations in parts is eligible for only CGPA and letter grade but not for award/medal from the University.

14.2 Re-Entry after Break of the study

- Candidates admitted to a program abstaining for more than 3 months must seek readmission into the appropriate semester.
- The candidate shall follow the syllabus in vogue (currently approved/is being followed) for the program.
- All re-admissions of candidates are subject to the approval of the University.

14.3 Evaluation of Answer Scripts

- Each theory examination shall have single evaluation. There shall be provision for re-evaluation on a payment of a fee. An external examiner shall value the paper, if the difference is more than 15% of previous marks the answer script shall be sent for third evaluation. In such an event, the average of the best two out of the three scores will be taken as the final score.

- Practical examination shall be jointly conducted and evaluated by one internal examiner and one external examiner.

14.4 Internship

- A candidate has to mandatorily complete 1 year (2 semesters) of internship. The total credit per semester is 20 and for two semesters it is 40.

a. Eligibility: A candidate should have passed in all the courses (Core, AEC, VAC and Multidisciplinary Electives) amounting to 131 number of credits before entering in to internship.

b. Internship guidelines: Each semester of Internship shall be minimum of 20 credits. The credits are calculated based on 1 credit = 3 to 5 hours of practical training. There shall be an exit exam at the end of the each semester at the college level.

c. Components of Exit Exam

Sl. No.	Components	Marks
1	Spotters	30
2	Case scenario/Stations	30
3	Viva Voice	40
Total Marks		100

Particulars of Practical, Viva-Voce

- Practical examination will be aimed at examination of clinical skills and competence of the candidates for undertaking independent work as an Respiratory Therapist.
- Viva- Voce examination shall aim at assessing, i.e., depth of knowledge, logical reasoning, confidence &oral communication skills.
- OSCE/OSPE- shall have minimum of 3 stations.

15. Syllabus

SEMESTER I

HUMAN ANATOMY & PHYSIOLOGY I

Course: Core **Credits: 04** **No. of hours: 60 Hours**

PART A- HUMAN ANATOMY

➢ Course Outcomes:

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

CO1: To identify and locate each of the body systems to apply anatomical knowledge toperform minor technical procedural skills.

CO2: To know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.

CO3: To know the anatomical basis of disease and injury.

CO4: To discuss the interrelationship of systems in maintaining homeostasis.

CO5: To describe the structure of each body system.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	4	**Introduction: Human body as a whole** 1.1 Definition of anatomy and its divisions 1.2Terms of location, positions, and planes 1.3 Cell and its organelles. 1.4Epithelium: definition, classification, describe with examples, function.	√			10	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.5 Glands: classification, describe serous & mucous glands with examples. 1.6 Basic tissues: classification with examples 1.7Demonstration: Histology of types of epitheliums. Histology of serous, mucous & mixed salivary gland.					
Unit II	5	**Locomotion and support** 2.1Bone: classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, inter-vertebral disc, fontanelles of fetal skull. 2.2 Joints: classification of joints with examples, synovial joint (in detail for radiology). 2.3Muscular system: classification of muscular tissue & histology, names of muscles of the body.	√			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		2.4 Demonstration: Bones & joints. Histology of compact bone (TS & LS). Demonstration of all muscles of the body. Histology of skeletal, smooth &cardiac muscle (TS & LS). Histology of the 3 types of cartilage. Demo of all bones showing parts, radiographs of normal.					
Unit III	5	**Cardiovascular system** 3.1Heart: size, location, chambers, exterior & interior, blood supply of heart 3.2 Systemic &pulmonary circulation, branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery, peripheral pulse, inferior vena cava, portal vein, Porto-systemic anastomosis, great saphenous vein, Dural venous sinuses. 3.3 Lymphatic system: cisterna chyli& thoracic duct, histology of lymphatic tissues, names of regional lymphatics, axillary and inguinal lymph nodes in brief.	√			25	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.4Demonstration of heart and vessels in the body. Histology of large artery, medium sized artery & vein, large vein. Histology of lymph node, spleen, tonsil & thymus. Normal chest radiograph showing heart shadows.					
Unit IV	10	**Gastro-intestinal system** 4.1 Parts of GIT, oral cavity, lip, tongue, dentition, pharynx, esophagus, stomach, small and large intestine, liver, gall bladder, pancreas. 4.2 Tonsil, salivary glands extrahepatic biliary apparatus, Waldeyer's ring 4.3Demonstration of parts of gastro intestinal system. Normal radiographs of gastro intestinal system. Histology of gastro intestinal system.	√			30	LE, SE, SA
Unit V	4	**Respiratory system** 5.1 Parts of RS, nose, nasal cavity, larynx, trachea, lungs, broncho-pulmonary segments, histology of trachea, lung and pleura, names of paranasal air sinuses.	√			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		5.2 Demonstration of parts of respiratory System Normal radiographs of chest. - Histology of lung and trachea.					
Unit VI	2	**Embryology** 6.1Spermatogenesis & oogenesis. Ovulation, fertilization. Fetal circulation. Placenta, Demonstration of models.		√		5	SE, SA

❖ **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended books:

1. Priya Ranganath, Leelavathy N, Basics in Human Anatomy for BSc Paramedical Courses, Revised and updatededition, The Health
2. Chaurasia BD. Human anatomy. CBS Publisher; 2004.
3. Vishram Singh, Textbook of Anatomy, Revised and updated edition, Elsevier
4. Waugh A, Grant A., Ross &Wilson Anatomy and physiology in health and illness E-book.Elsevier Health Sciences; 2014 Jun 25.
5. Inderbir S. Textbook of human histology with color atlas. New Delhi: Jaypee Brothers MedicalPublishers.2006.

PART B- PHYSIOLOGY

➢ Course Outcomes:

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

CO1: To demonstrate the understanding of physiological structure of Renal system, endocrine system,Nervous system and special senses.

CO2: To broadly identify the clinical abnormalities of organs and its clinical physiological implications

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	2	**General Physiology** 1.1 Introduction to physiology 1.2 Homeostasis: Definition, Positive feedback, negative feedback. PH 1.3 Body Fluid Compartments	√	√		15	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit II	5	**Muscle Nerve physiology** 2.1.1Introduction, Classification and structure of muscle, sarcomere 2.2Neuromuscular junction, Transmission across neuromuscular junction. 2.3 Excitation contraction coupling. Mechanism of muscle contraction, rigor mortis.	√	√		20	LE, SE, SA
Unit III	7	**Blood** 3.1 Introduction: composition and function of blood. 3.2 Blood Cells: types, Normal Count 3.3 Red blood cells: function. Erythropoiesis: Definition, Stages, Factors affecting	√	√		25	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.4 Hemoglobin: Function, concentration Physiological variation of RBC Count and Hb 3.5 White blood cells: different types, functions, normal count, differential count 3.6 Platelets: origin, normal count, functions. 3.7 Hemostasis: definition, steps, clotting factors, mechanism of clotting, disorders of clotting 3.8 Blood groups: ABO system, Rh system: Rh factor, Rh incompatibility. 3.9 Blood grouping & typing, cross matching.					

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.10 Blood transfusion: indication, universal donor and recipient concept. Selection criteria of a blood donor, transfusion reactions. 3.11 Anemias: definition, Symptoms and signs (brief). 3.12 Blood indices: color index, MCH, MCV, MCHC (def and Normal Values). 3.13 ESR and PCV: normal values, definition, determination (methods). 3.14Plasma proteins: types and concentration, functions of albumin, globulin, fibrinogen, prothrombin. 3.15 Blood volume: normal value, determination of blood volume					

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit IV	8	**Cardiovascular system** 4.1 Heart: physiological anatomy, nerve supply. 4.2Properties of cardiac muscle PH 4.3Cardiac cycle: definition, systole, diastole, phases, JVP (brief) 4.4Cardiac output, stroke volume, EDV (only definitions). 4.5 Heart sounds, normal heart sounds, mechanism and features, areas of auscultation. 4.6 Blood pressure: definition, normal value, clinical measurement of blood pressure, hypotension, hypertension. 4.7Heart rate: Physiological variations, regulation (brief), radial pulse.	√	√		20	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		4.8Electrocardiogram (ECG): Definition, Normal ECG, Causes of ECG waves, Uses of ECG. 4.9Cardiac shock: Definition, Types (brief), Triple response.					
Unit V	6	**Respiratory system** 5.1Introduction: Functions of respiratory system, physiological anatomy of respiratory system, respiratory tract 5.2Respiratory organs: lungs, alveoli, respiratory membrane 5.3Mechanism of breathing: Inspiration and Expiration, muscles involved, Mechanism. 5.4Surfactant: Composition, Function.	√	√		20	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		5.5Transport of oxygen: forms of transport, Oxygen Hemoglobin Curve. 5.6Lung volumes and capacities: Spirogram, Definitions and normal Volumes. 5.7Regulation of respiration: Nervous and chemical regulation, respiratory Centre, Herring Breur reflexes. 5.8Hypoxia: Def, Classification, Description (in brief). 5.9 Cyanosis, Asphyxia, Dyspnea, Dysbarism, Artificial Respiration, Apnea. (Definition Only)					

❖ **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books:

1. Guyton (Arthur): Text Book of Physiology. Latest Ed. Prism publishers.
2. Ganong William F: Review of Medical Physiology. Latest Ed. Tata McGraw Hill
3. Chatterjee CC: Human Physiology Latest Ed. Vol-1, Medical Allied Agency.

Choudhary Sujith K:Concise Medical Physiology Latest Ed. New Central Book.

PATHOLOGY & MICROBIOLOGY-I

Course: Core **Credits: 04** **No. of hours: 60 Hours**

PART A- PATHOLOGY

- **Course Outcome:**

At the end of the course, the student should be able to:

CO1: Explain the blood cells structure, functions & its formation.

CO2: Enumerate the methods of estimating cell counts.

CO3: Demonstrate blood collection by various methods

- **COURSE CONTENT:**

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	2	**Introduction to Pathology**		√		05	SA
Unit II	12	**Hematology** 2.1. Normal constituents of Blood, their structure and functions. 2.2. Collection of Blood samples. 2.3. Various anticoagulants used in hematology. 2.4. Hemoglobin estimation, different methods and normal values.	√			35	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		2.5. RBC count. 2.6. WBC count. 2.7. Platelet count.					
Unit III	10	**Blood Bank** 3.1. Introduction to blood banking. 3.2. Blood group system: ABO & Rh system. 3.3. Methods of blood grouping: Forward & Reverse. 3.4. Donor selection criteria. 3.5. Collection and processing of blood for transfusion.	√			30	LE, SE, SA
Unit IV	6	**Clinical Pathology** 4.1. Collection, transport, preservation and processing of various clinical specimens. □ Urine. □ CSF. □ Stool. □ Sputum. □ Body fluids.	√			30%	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		4.2. Urine examination-collection and preservation, Physical, chemical and microscopic examination for abnormal constituents.					

❖ **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books

1) Makroo RN. Blood Transfusion Reactions. In: Compendium of transfusion medicine.2nd ed.2009;332-345

2) Harmening DM. Adverse effects of Transfusion In: Modern Blood Banking & Transfusion practices.6th ed. 2012.

PART B- MICROBIOLOGY

➢ Course Outcome:

At the end of the course, the student should be able to:

CO1: The general criteria for microbial classification, Types of culture medias and methods.

CO2: Identify key concepts of immunology.

CO3: Implement the common sterilization and disinfection methods.

CO4: Outline and practice general biomedical waste management.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	5	**Introduction** 1.1 Introduction & history of Microbiology 1.2 Classifications of microorganisms & structure of bacteria 1.3 Microscopy and types of microscopes	✓			10	LE, SE
Unit 2	3	**Growth & Nutrition** 2.1 Nutrition, growth and multiplication of bacteria, Bacterial Growth Curve 2.2 Culture medias 2.3 Culture methods	✓			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 3	4	**Sterilization & Disinfection** 3.1 Classification of Sterilization and Disinfection 3.2Sterilization: Different methods of sterilization, Principles and use of equipment's of sterilization- Hot Air oven &Autoclave in detail 3.3 Disinfection: Commonly used chemical disinfectants and their uses	✓			30	LE, SE
Unit 4	9	**Immunology** 4.1 Immunity- Classification and types 4.2 Antigen 4.3 Antibody 4.4 Antigen antibody reactions 4.5 Hypersensitivity reactions 4.6 Immunization schedule	✓			30	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 5	4	**Infection** 5.1 Infection- Definition, types, sources and mode of transmission 5.2 Hospital acquired infections 5.3 Types of infectious diseases- outbreak, endemic, epidemic, pandemic	✓			10	SE, SA
Unit 6	5	**Applied Microbiology** 6.1 Biomedical Waste Management: Principles & Practices 6.2 Standard precautions 6.3 Hand hygiene technique and body fluids spill management 6.4 Needle stick injury management-1	✓			10	SE, SA

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended Book

1. Baveja CP. Textbook of microbiology. Arya Publications; 2005.
2. Ananthanarayan R. Ananthanarayan and Paniker's textbook of microbiology. Orient Blackswan;2006.
3. Owen JA, Punt J, Stanford SA, Jones PP, Kuby J.Kuby immunology. Seventh edition, International edition. Basingstoke: Macmillan Higher Education; 20135.

BIOCHEMISTRY

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcomes:

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

CO1: Have knowledge and understanding of procedures of specimen collection, reagent preparation of specimens, performing biochemical tests, interpreting results, and managing biomedical waste effectively.

CO2: Understand the basic procedures in specimen collection, reagent preparation, and testing in a clinical laboratory.

CO3: Demonstrate the knowledge of properties of biomolecules and their function.

CO4: Have knowledge of the importance of nutrition in health and diseases.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	5	**Introduction to Biochemistry and Clinical Laboratory** **1.1Specimen collection:** Pre analytical, variables, collection of blood, Urine, CSF, and other body fluids, anticoagulants and preservatives	✓			15	LE, SA, SE

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.2 Dilutions: Dilution of solutions (Preparation of 0.1 N NaCl from 1 N NaCl), Preparation of percent solutions, Preparing working standard from stock standard, Specimen dilutions, Serial dilutions, and Reagent dilution	✓				
		1.3 Special investigations: Normal values, methods, and interpretation of biochemical parameters. Preparation of patients for special investigations, and interfering substances	✓				
		1.4 Quality control: Definition, types, IQAS and EQAS, Calculation of mean, standard deviation and percentage of coefficient variation		✓			
		1.5 Safety measures, Conventional and SI units	✓				
		1.6 Bio Medical waste management					

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit II	10	**Carbohydrate and Lipid chemistry** **2.1** Introduction, Definition, Properties of carbohydrates, Classification with suitable examples. **2.1.1** Biomedical importance of carbohydrates. **2.2** Introduction, Definition, Functions, and Classification of Lipids. Definition and Classification of fatty acids, Essential fatty acids with examples.	✓ ✓ ✓			25	LE, SE
Unit III	5	**Protein chemistry and Plasma Proteins** **3.1** Introduction, Definition, and Classification of amino acids with examples. **3.1.1** Peptides: definition & biologically important peptides with examples **3.1.2** Introduction, Definition, and Classification of Proteins with examples **3.1.3** Functions of amino acids and Proteins	✓ ✓ ✓ ✓			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.2 Introduction, types, functions, and biological reference range of plasma proteins. **3.2.1** Immunoglobulins	✓ ✓				
Unit IV	5	**Enzymes** **4.1** Introduction, Definition, classification with suitable examples, Active site of enzyme, Factors influencing enzyme activity, **4.1.1** Definition of Cofactor, Coenzyme, And isoenzymes with examples.	✓ ✓			10	LE, SE, SA
Unit V	10	**Vitamins and Minerals** **5.1** Introduction, Definition, classification, Fat soluble and water-soluble vitamins: Sources, RDA, Biological functions and deficiency disorders. **5.2** Introduction, Definition and classification of macro and micro minerals with examples	✓ ✓			20	LE, SE

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		5.2.1 Calcium, Phosphorous, iron, Sodium, Potassium: Sources, RDA, Reference ranges, Functions and Disorders of deficiency and excess	✓				
Unit VI	10	**Nutrition** **6.1** Calorific values of carbohydrates, proteins, and fats **6.2** Nutritional importance of Carbohydrates, lipids, proteins, and Essential amino acids **6.3**SDA: Definition, values for major macronutrients, Significance of SDA **6.4** Basal metabolic rate (BMR): Definition, Reference range of BMR in men and women, Factors affecting BMR **6.5** Dietary fibers: Definition, functions, importance and their daily requirements Balanced diet	✓ ✓ ✓ ✓ ✓			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		6.6 Essential fatty acids: Definition, functions and deficiency manifestations **6.7** Define the classes of protein-energy malnutrition: marasmus and kwashiorkor.	✓				

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books

1) Vasudevan DM, Sreekumari S, Vaidyanathan K. Textbook of Biochemistry for medical students. Jaypee Brothers Medical Publishers; 2019 Sep 30.
2) Satyanarayana U and U Chakrapani. 2013. Biochemistry (version 4th ed). 4th ed. New Delhi: Elsevier Health Sciences APAC.

INTRODUCTION TO RESPIRATORY THERAPY PROFESSION

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Explain the history of respiratory care and its professional organizations.

CO2: Understand the role and scope of the respiratory therapist in the health care sector.

CO3: Understand the Academic and Career Perspectives in Respiratory Therapy.

CO4: Understand and explain the standards of professional practice.

CO5: Recognize the ethical and legal aspects implied in respiratory care profession.

CO6: Understand the importance of developing communication skills and the need for maintaining interpersonal andinter professional relationships.

CO7: Discuss the standards of clinical practice including health promotion and infection control practices.

CO8: Understand the importance of various clinical domains and practice in Respiratory Therapy.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	8	Respiratory Care as a profession 1.1 History and development of Respiratory Therapy profession		✔		10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.2 Professional Organizationsand events 1.3 Respiratory Therapy education					
Unit II	8	Role and Scope of Respiratory Therapist in the Health Care Sector	✔			15	LE, SE, SA
Unit III	8	Academic and Career Perspectives in Respiratory Therapy 3.1Academic Perspectives- Masters, Doctorate, Post-Doctoral Fellowships in Respiratory Care and Allied Fields; Higher Certification in advanced and related areas like Emergency Medical Care and Extra corporeal Life Support Therapy 3.2Clinical Professionals 3.3Academic Professionals 3.4Research Professionals 3.5Corporate Professionals		✔		10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit IV	10	Standards of ProfessionalPractice 4.1 Competencies 4.2 Scope of Practice-Diagnostics and Therapeutics 4.3 Standards of practice 4.4 Evidence-Based Respiratory Therapy 4.5 Research in RespiratoryTherapy 4.6 Elements of hospital based Respiratory Therapy 4.7 Critical thinking in Respiratory Therapy 4.8 Professional Hierarchy in Respiratory Therapy Profession	✔			15	LE, SE, SA
Unit V	8	Ethical and Legal Implications of Practice- 5.1 Codes of Ethics 5.2 Ethical Theories and principles &Legal issues related to Respiratory Therapy Profession		✔		10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 6	8	Communication in Healthcare 6.1 Communication skills 6.2 Conflict and conflict resolution 6.3 Interpersonal and inter-professional relationship	✔			20	LE, SE, SA
Unit 7	10	Standards of ClinicalPractice 7.1 Clinical Assessment andManagement 7.2 Health promotion and Education 7.3 Principles of Infection Prevention and Control 7.4 Infection prevention strategies Hand washingsteps and significance 7.5 Isolation Procedures	✔			20	LE, SE, SA

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books:

- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book

ENGLISH AND COMMUNICATION – I

Course: AEC **Credits: 03** **No. of hours: 45 Hours**

➢ Course Outcomes:

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

CO1: Acquire the LSRW (Listening, Speaking, Reading, and Writing) skills. Through Cambridge Interchange Fifth Edition, students will develop real world communication skills- enhancing fluency in speaking, listening, reading and writing – wile mastering grammar, expanding vocabulary and improving pronunciation with supportive digital tools.

CO2: Learn to appreciate Literature.

CO3: Be aware of social responsibilities.

CO4: Enhance the analytical skill

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	10	**Cambridge: Interchange Fifth Edition** 1.1 Good Memories 1.2 Life in the City 1.3 Making Changes 1.4 Have you ever tried it? 1.5 Hit the Road. 1.6 Sure. I will do it. 1.7 What do you use this for? 1.8 Time to Celebrate.	√			23%	SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit II	8	**Phonetics** 2.1 Brief Introduction 2.2 Classification of Vowels, Diphthongs and Consonants 2.3 Pronouncing the words phonemically and transcribing them into Phonetics 2.4 IPA	√			18%	SA
Unit III	11	**Grammar and Written Communication** 3.1 Parts of Speech 3.2 Verb Tenses 3.3 Articles 3.4 Capitalization and Punctuation 3.5 E-mail Drafts 3.6 Formal Letters 3.7 Essay Writing	√			24%	SA
Unit IV	4	**Prose** 4.1 Steev Jobs: Commencement Address 4.2 Mother Teresa's Award-Winning Speech	√			9%	LE, SE

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit V	6	**Poetry** 5.1 The Road Not Taken: Robert Frost 5.2 The Man with the Wooden Leg: Catherine Mansfield 5.3 Our Casuarina Tree: Toru Dutt	√			13%	LE, SE
Unit VI	6	**Short Stories** 6.1Gift of the Magi: O' Henry 6.2Kabulivala: Raindranath Tagore 6.3The Blue Umbrella: Ruskin Bond		√		13%	LE, SE

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended Books:

1. Cambridge: Interchange Fifth Edition
2. Contemporary English Grammar Structures & Composition by David Green
3. English Grammar and Composition: Wren & Martin
4. English Grammar in Use by Raymond Murphy

KANNADA

Course: AEC **Credits: 02** **No. of hours: 30 Hours**

- **Course Outcome:**

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

CO1: Enable students to learn alphabet, words and simple sentences in Kannada.

CO2: Enable students to enhance speaking and writing communicative skills in Kannada and learntechnical words related to medical science

- **COURSE CONTENT:**

Unit I: Kannada Letters (vowels, Consonant)

Unit II: Words, Phrases, formation of sentences, Letter Writing, Essay Writing. Treatment related Kannadawords (from English to Kannada)

Unit III:

1) Possible communication in Kannada between Patients and Doctors.
2) Advising sentences to the possible questions of patients.
3) Some important sentences which enable to communicate with doctors and colleagues.

Recommended Books

- Kannada Vyakarana – (8th ,9th and 10th Karnataka government text books)
- HSK, Vyavarahika Kannada

SEMESTER II

HUMAN ANATOMY & PHYSIOLOGY II

Course: Core **Credits: 04** **No. of hours: 60 Hours**

PART A- HUMAN NANATOMY

➢ Course Outcomes:

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

CO1: To identify and locate each of the body systems to apply anatomical knowledge to perform minor technical procedural skills.

CO2: To know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.

CO3: To know the anatomical basis of disease and injury.

CO4: To discuss the interrelationship of systems in maintaining homeostasis.

CO5: To describe the structure of each body system.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	5	Urinary system 1.1 Kidney, ureter, urinary bladder, male and female urethra. 1.2 Demonstration of parts of urinary system. Histology of kidney, ureter, urinary bladder.	√			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit II	10	Reproductive system 2.1Parts of male reproductive system, testis, vas deferens, epididymis, prostate 2.2 Parts of female reproductive system, uterus, fallopian tubes, ovary 2.3 Mammary gland 2.4 Demonstration of section of male and female pelvis with organs in situ. Histology of male and female reproductive organs.	√			30	LE, SE, SA
Unit III	3	Endocrine glands 3.1Endocrine glands: pituitary gland, thyroid gland, parathyroid gland, suprarenal gland 3.2 Demonstration of the glands. Histology of pituitary, thyroid, parathyroid, suprarenal glands.		√		15	SE, SA
Unit IV	10	Nervous system 4.1 Neuron, classification of nervous system, cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve, meninges, ventricles & cerebrospinal fluid, names of basal nuclei, blood supply of brain, cranial nerves. Sympathetic trunk&	√			25	LE, SE, SA

		names of parasympathetic ganglia 4.2 Histology of peripheral nerve & optic nerve. Demonstration of all plexuses and nerves in the body. Demonstration of all parts of brain. Histology of cerebrum, cerebellum, spinal cord.					
Unit V	2	Sensory organs 5.1 Skin: histology, appendages of skin. 5.2 Eye: parts of eye & lacrimal apparatus. Extra-ocular muscles & nerve supply. 5.3 Parts of ear: external, middle, and inner ear and contents. 5.4 Histology of thin and thick skin. Demonstration and histology of eyeball. Histology of cornea & retina.		√		15	SE, SA

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended Books

1. Chaurasia BD. BD Chaurasia's Human Anatomy. CBS Publishers & Distributors PVt Ltd.; 2010.
2. Sampath Madhyastha, Manipal Manual of Anatomy for Allied Health Sciences,New Delhi: CBS publishers and distributors.
3. Waugh A, Grant A. Ross & Wilson Anatomy and physiology in health and illness E-book. Elsevier Health Sciences; 2014 Jun 25.
4. Dilly PN. Essentials of Human Embryology. Postgraduate Medical Journal. 1984 Jun;60(704):447.
5. Inderbir S. Textbook of human histology with color atlas. New Delhi: Jaypee Brothers Medical Publishers. 2006.

PART B- PHYSIOLOGY

➢ Course Outcomes:

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

CO1: To demonstrate the understanding of physiological structure of Renal system, endocrine system, Nervous system and special senses.

CO2: To broadly identify the clinical abnormalities of organs and its clinical physiological implications

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	5	**Digestive System** 1.1 Introduction 1.2Physiological anatomy of gastro intestinal tract (All Structures in brief), functions of digestive system 1.3Functions of Saliva 14Deglutition: definition, stages 1.5Stomach: functions 1.6Gastric secretion: composition, function, Phases of secretion 1.7Pancreas: Functions (exocrine), pancreatic juice: composition and regulation. Secretin and CCK-PZ	√			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.8Liver: Functions, Bile secretion, composition, function of bile; 1.9Bilirubin metabolism, types of bilirubin, Vandenberg reaction, Jaundice: types, significance. 1.10Gall bladder: Functions. 1.11Small intestine: functions, digestion and absorption, movements. (brief) 1.12Large intestine: functions, defecation reflex					
Unit II	5	**Renal system** 2.1 Introduction: Functions of kidneys, composition of urine, nephron, cortical and juxtamedullary nephrons (comparison), 2.2 Juxta Glomerular Apparatus: structure and function. 2.3 Mechanism of urine formation	√	√		15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		2.4 GFR: Definition, Normal Values, factors effecting GFR, Measurement (Creatine, Inulin Clearance). Tubular reabsorption, TMG, Tubular secretion (brief). 2.5Mechanism of urine concentration: Counter-current mechanisms, Role of ADH 2.6 Micturition, innervation of bladder, cystometrogram.					
Unit III	2	**Skin and Body temperature** 3.1Structure and function of Skin 3.2 Body Temperature: physiological variation. 3.3 Regulatory mechanisms: Mechanisms Activated by Heat/Cold	√	√		10	SE

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.4 Role of hypothalamus, and fever.					
Unit IV	5	**Endocrine System** 4.1 Introduction: Definition, classification of endocrine glands & their hormones. 4.2 Hypothalamo-pitiutary Axis 4.3 Pituitary hormones: anterior and posterior pituitary hormones, Functions of Growth hormone, 4.4 Thyroid gland: Thyroid Hormones: physiological function, regulation of secretion, disorders: hypo and hyper secretion of hormone. 4.5Adrenal cortex: functions of Cortisol and Aldosterone 4.6 Adrenal medulla: functions of Adrenaline and Nor-adrenaline.		√		15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		4.7Pancreas (Endocrine): Hormones of pancreas. 4.8Insulin: functions, regulation of blood glucose level, Diabetes mellitus 4.9 Regulation of Calcium Metabolism: Hormones involved, actions of PTH, Calcitonin, Vit D3					
Unit V	5	**Reproductive system** 5.1 Introduction, Function of reproductive system, Changes during puberty. 5.2 Male reproductive system: functions of testes Spermatogenesis: Definition, site, stages, factors influencing, Endocrine functions of testes. 5.3 Androgens: testosterone functions. 5.4 Female reproductive system	√	√		15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		5.5Menstrual cycle: Definition, changes, ovulation 5.6 Functions of progesterone and estrogen 5.7 Physiological changes during pregnancy, Lactation(brief), milk ejection reflex					
Unit VI	3	**Special senses** 6.1 Vision: Functions of different parts(brief) 6.2 Optic Pathway, Dark Adaptation, Color vision. 6.3Hearing: Function of Middle Ear, Functions of inner ear, mechanism of hearing (brief). 6.4Chemical Senses: Taste: types, receptor, Smell: physiology, receptors.	√	√		15	SE, SA
Unit VII	7	**Nervous system** 7.1 Introduction: Parts of CNS and PNS, Functions of nervous system	√	√		15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		7.2Neuron: definition, structure 7.3 Nerve Fiber: classification, conduction of impulses continuous and saltatory. 7.4Synapse: Definition, structure, types, properties (brief). Receptors: definition, classification, properties (brief). 7.5Reflex: Definition, Reflex Arc, Examples. 7.6Spinal cord nerve tracts: Diagram and Functions: Lateral Spino Thalamic Tract, Dorsal Column, Pyramidal Tract. 7.7Spinal cord nerve tracts: Diagram and Functions: Lateral Spino Thalamic Tract, Dorsal Column, Pyramidal Tract. 7.8Cerebro Spinal Fluid (CSF): site of formation, circulation (brief), functions.					

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		7.9Autonomic Nervous System: Sympathetic and parasympathetic distribution and functions (brief).					

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books

1. Guyton (Arthur): Text Book of Physiology. Latest Ed. Prism publishers.
2. Ganong William F: Review of Medical Physiology. Latest Ed. Tata McGraw Hill
3. Chatterjee CC: Human Physiology Latest Ed. Vol-1, Medical Allied Agency. Choudhary Sujith K: Concise Medical Physiology Latest Ed. New Central Book.

PATHOLOGY & MICROBIOLOGY-II

Course: Core **Credits: 04** **No. of hours: 60 Hours**

PART A- PATHOLOGY

➢ Course objectives:

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

CO1: To study fundamental aspects of different groups of microorganisms and their importance.

CO2: To compute medically important infective organisms and their diagnosis.

CO3: To enumerate the common infections of bacteria, virus, parasite and fungi.

CO4: To understand fundamental analytical principles and process used in histopathology

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	12	Histopathology 1.1 Introduction to histopathology 1.2. Grossing technique 1.3. Tissue processing (Fixation, Dehydration, Clearing & Impregnation) 1.4. Embedding technique 1.5. Section cutting 1.6. H&E staining	√			30	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit II	6	Cytology 2.1. Introduction to cytology. 2.2 FNAC 2.3. PAP stain.	√			25	SE, SA
Unit III	12	General Pathology 3.1. Cell injury: Agents causing cell injury, cellular adaptations (hypertrophy, atrophy, hyperplasia, metaplasia) reversible and irreversible injury. 3.2. Inflammation: Cardinal signs of inflammation, acute and chronic inflammation. Laboratory tests in inflammation. 3.3. Hemodynamic □ Edema & shock □Thromboembolism; Infarction.	√			45	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.4. Neoplasia: Definition of neoplasm, differences between benign and malignant tumors, Carcinogenesis. 3.5. Genetic disorders: Introduction to genetic disease and classification of genetic disorder.					

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended Books:

1. Histopathology techniques and its management –by Dr.Ramdas Nayak
2. RamnikSood ,Text book of Medical Laboratory Technology 6th Edition, Vol 1 & 2

PART B- MICROBIOLOGY

➢ Course Outcomes:

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

CO1: To outline fundamentals aspects of microbiology including origin, evolution of microorganisms, different groups of microorganisms and their importance, microscopy principles and applications, morphology, and structure.

CO2: To explain microbiological media, isolation, cultivation and enumeration methods of microorganisms, microbial growth characteristics, maintenance, and preservation of microbial cultures.

CO3: To develop knowledge on basic immunological concepts.

CO4: To develop knowledge on general characteristics, structure and reproduction of fungi and parasites.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	11	**Systematic Bacteriology** **1.1** Overview of common bacterial infections & bacterial virulence factors and antimicrobial sensitivity test	✓			30	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.2 Morphology, pathogenesis and laboratory diagnosis of medically important bacteria (Staphylococcus aureus & MRSA, Pneumococcus. Enterobacteriaceae- Salmonella (Enteric fever), E. coli, Vibrio cholerae, Mycobacterium tuberculosis **1.3** Biochemical reactions and identification of bacteria.					
Unit II	8	**Virology** 2.1 Nutrition, growth and multiplication of bacteria, Bacterial Growth Curve	✓			30	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		2.2 Morphology, pathogenesis and laboratory diagnosis of (HIV-1, Hepatitis viruses- Hepatitis B & Hepatitis C virus, Rabies-1, Arbo Viruses-Dengue virus					
Unit III	4	**Mycology** 3.1 Introduction to Mycology-1 3.2 Morphology, pathogenesis and laboratory diagnosis of (Dermatophytes, Candida, Cryptococcus)	✓			20	LE, SE, SA
Unit IV	7	**Parasitology** 4.1 Introduction to Parasitology. 4.2 Morphology, Life cycle, pathogenesis and laboratory diagnosis of (E.histolytica, Plasmodium, Ascaris, T.solium, T.saginata, Ancylostoma)	✓			20	LE, SE, SA

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books:

1. Baveja CP. Textbook of microbiology. Arya Publications; 2005.
2. Ananthanarayan R. Ananthanarayan and Paniker's textbook of microbiology. Orient Blackswan; 2006.

ENGLISH AND COMMUNICATION – II

Course: AEC **Credits: 03** **No. of hours: 45 Hours**

➢ Course Outcomes:

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

CO1: Acquire the LSRW (Listening, Speaking, Reading, and Writing) skills. Through Cambridge Interchange Fifth Edition, students will develop real world communication skills- enhancing fluency in speaking, listening, reading and writing – wile mastering grammar, expanding vocabulary and improving pronunciation with supportive digital tools.

CO2: Learn to appreciate Literature.

CO3: Be aware of social responsibilities.

CO4: Enhance the analytical skill

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	13	**Cambridge Interchanges Fifth Edition** 1.1 Only Time Will Tell 1.2 I Like Working with People 1.3 It's Really Worth Seeing 1.4 It's a Long Story 1.5 That's Entertainment 1.6 Now I Get it 1.7 I wouldn't have done that 1.8 Making Excuses	√			29%	SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit II	3	**Phonetics – IPA Transcription**	√			7%	SA
Unit III	13	**Grammar and Written Communication** 3.1 Reported Speech 3.2 Modals 3.3 Clauses 3.4 Gerunds 3.5 Active and Passive Voice 3.6 Synonyms and Antonyms 3.7 News Report Writing 3.8 Speech Writing 3.9 Dialogue Writing	√			29%	SA
Unit IV	4	**PROSE** 4.1 Chicago Address by Swami Vivekananda 4.2 I have a Dream: Martin Luther King	√			9%	LE, SE
Unit V	6	**Poetry** 5.1 Still, I Rise: Maya Angelou 5.2 The Raven: Edgar Allen Poe 5.3 Break, Break, Break: Alfred Lord Tennyson	√			13%	LE, SE

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit VI	6	**Short Stories** 6.1 The Luncheon: William Somerset Maugham 6.2 The Power of Prayer: APJ Abdul Kalam 6.3 The Necklace: Guy De Maupassant		√		13%	LE, SE

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books:

1. Cambridge: Interchange Fifth Edition
2. Contemporary English Grammar Structures & Composition by David Green
3. English Grammar and Composition: Wren & Martin
4. English Grammar in Use by Raymond Murphy

CONSTITUTION OF INDIA

Course: VAC **Credits: 02** **No. of hours: 30 Hours**

➢ Course Outcome:

At the end of this course, students will gain knowledge on

CO1: This course is to keep the students abreast with the knowledge of the Constitution of India.

CO2: To make the students understand the importance of human rights as citizens of India.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	5	**Indian Constitution** • Meaning and Importance of Constitution • The Constituent Assembly • The Preamble • Salient Features of Constitution	√			10	SE, SA
Unit II	3	**Fundamental Rights and Directive Principles** Meaning and Differences between Fundamental Rights and Directive Principles	√			20	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Fundamental Rights • Rights Information Act Meaning, importance of RTI 2005					
Unit III	4	**Union Government** • The President of India-Election, Powers and Position • Prime Minister and Council of Ministers • Parliament –Lok Sabha, Rajyasabha-Organisations and Powers	√			15	LE, SE, SA
Unit IV	4	**State Government** • The Governor • Chief Minister and Council of Ministers • State Legislature Vidhana Sabha, Vidhana Parishad-Organizations and Powers	√			10	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit V	2	**Federalism in India** • Meaning Federal and Unitary Features	√			10	SE, SA
Unit VI	2	**The Judiciary** • The Supreme Court- Organization, Jurisdiction and Role • The High Court- Organization, Jurisdiction and Role	√			10	SE, SA
Unit VII	2	**Electoral Process in India** • Election Commission – Organization, Functions	√			10	SE, SA
Unit VIII	2	**Local Governments** • Rural and Urban- Organization, Powers and Functions	√			5	SE, SA
Unit IX	3	**Human Rights** • Human Rights- Meaning	√			5	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Universal Declaration of Human Rights • Remedies against Violation of Human Rights in India					
Unit X	3	**Special Constitutional Provisions** • Special Rights created in the constitution for: Dalits, Backwards, Women and Children and the Religious and Linguistic Minorities. • Constitution and Sustainable Development in India • Minority Commission in India	√			5	SE, SA

❖ **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books

- Basu, D.D, Constitution of India, New Delhi Himalaya Publication; 2001
- Dinesh Shelton, David P Stuart, International Human Rights in Nutshell. Thomas Burgenthel, West Nutshell Publisher; London; 2005.
- ParvathyAppaiah, Constitution of India, Mangalore DivyaDeepa Publication; 2005
- ParvathyAppaiah, Human Rights. DivyaDeepa Publication Mangalore; 2016
- RajRam. M, Constitution of India Himalaya Publication, New Delhi; 1999

INTRODUCTION TO RESPIRATORY THERAPY EQUIPMENT

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course outcome:

At the end of the course, the student should be able:

CO1: To identify the equipment used in theRT department and the principles behind it.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	6	**Introduction on to Mechanical Ventilation- Invasive and Non Invasive Ventilation** 1.1 Components of a Ventilator	✔			10	LE, SE, SA
		1.2 Negative and Positive PressureVentilation	✔				
		1.3 Non-Invasive MechanicalVentilation	✔				
		1.4 Invasive Mechanical Ventilation	✔				
Unit 2	6	**Introduction to Oxygen Therapy 2.1 Goals**	✔			15	LE, SE, SA
		2.2 Indications	✔				
		2.3 Low flow and High Flow Devices	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHT AGE %	TYPE OF QUESTIONS
		2.4Variable and Fixed performancedevices and Hazards of Oxygen Therapy	✔				
Unit 3	6	**Introductionto Artificial Airways** 3.1 Oropharyngeal Airways	✔			10	LE, SE, SA
		3.2 Nasopharyngeal Airways	✔				
		3.3 Supraglottic Airways	✔				
		3.4 Subglottic Airway Devices	✔				
Unit 4	6	**Manual Resuscitatorand Breathing Circuits** 4.1 Manual Resuscitators - Types	✔			15	LE, SE, SA
		4.2 Parts of Manual Resuscitator	✔				
		4.3 Mapleson Breathing Circuit	✔				
		4.4 Hazards associated with ManualResuscitator	✔				
Unit 5	6	**Overviewof Aerosol Therapy Devices** 5.1 Characteristics of TherapeuticAerosols	✔			10	LE, SE, SA
		5.2 Aerosol Drug Delivery Systems	✔				
		5.3 Pressurized Metered Dose Inhalers and Dry powder inhalers.	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		5.4 Nebulizers and Hazards ofAerosol Therapy	✔				
Unit 6	6	**Overview of Humidifiers** 6.1 Physical Principles GoverningHumidifier Function.	✔			5	SE, SA
		6.2 Types -Active and PassiveHumidifies	✔				
Unit 7	6	**ICU Equipments** 7.1 Defibrillators and ABG Machine	✔			10	LE, SE, SA
		7.2 Neonatal and Pediatric ICUEquipment	✔				
Unit 8	6	**Medical Gas Cylinders** 8.1 Markings and Identification,Color Codes for Medical Gas Cylinders, Cylinder Sizes and Contents, Cylinder Safety ReliefValves and Gas Cylinder Safety		✔		5	SE, SA
Unit 9	6	**Pulmonary Function LaboratoryEquipment** 9.1 Volume-measuring devices and ·Flow-measuring devices	✔			10	LE, SE, SA
		9.2 Bellows Spirometer and DryRolling Seal Spirometer	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHT AGE %	TYPE OF QUESTIONS
Unit 10	6	**Lung Expansion and AirwayClearance Devices** 10.1 Intermittent Positive PressureBreathing Device (IPPB) and · Incentive Spirometer	✔			10	LE, SE, SA
		10.2 Acapella, Vest and ·Flutter	✔				

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books:

- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book.

CARDIOPULMONARY APPLIED ANATOMY & PHYSIOLOGY

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course outcome:

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

CO1: Anatomy of airways and cardiovascular system.

CO2: Mechanics of breathing & circulation.

CO3: Lung volumes and capacities & oxygen and carbon-dioxide transport.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	8	**Anatomy ofUpper & Lower Airways** 1.1 Major developmental events of the respiratory system.	✔			10	LE, SE, SA
		1.2 Key element offetal circulation	✔				
		1.3 Post-natal lungdevelopment	✔				
		1.4 Structure and function of the upper and lower respiratory tract	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.5. Pulmonary vascular, lymphatic and nervous system	✔				
Unit 2	6	**Muscles of Respiration & Mechanics of Breathing** 2.1Primary and accessory muscle's location and their role in each phase of breathing	✔			15	LE, SE, SA
		2.2 Innervations of themuscles of respiration	✔				
		2.3Pressure DifferencesDuring Breathing and forces Opposing lung inflation	✔				
		2.4Mechanics ofexhalation	✔				
Unit 3	6	**Anatomy of Heart SystemicPulmonary and Coronary Circulation** 3.1 Anatomy of The heartand properties of cardiac muscles	✔			5	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.2 Systemic and pulmonary circulation/ peripheral vascular resistance	✔				
Unit 4	6	**LungVolumes and Capacities** 4.1 Define lungvolumes and capacities	✔			10	LE, SE, SA
		4.2 Normal values of lung volumes and capacities	✔				
Unit 5	6	**Ventilation and Perfusion Relationship** 5.1Regional and local factors affecting distribution of ventilation	✔			15	LE, SE, SA
		5.2 Efficiency andeffectiveness of ventilation	✔				
		5.3 Regional differencesin ventilation to perfusion ratio & normal ventilation to perfusion ratio and causes forabnormal V/Q ratio	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 6	8	**Oxygenand Carbon Dioxide Transport** 6.1 Chemically Combined Oxygen transport & Normal Loading and Unloadingof Oxygen and factors Affecting	✔			15	LE, SE, SA
		6.2 Total oxygen content of the blood &Oxygen dissociation Curve	✔				
		6.3 Abnormal hemoglobin	✔				
		6.4 Carbon dioxide transportation & CO2dissociation curve	✔				
Unit 7	6	**AcidBase Chemistry** 7.1 Hydrogen ion regulation in body fluid	✔			10	LE, SE, SA
		7.2Physiologic Roles of Bicarbonate and Nonbicarbonate Buffer System	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		7.3Physiologic Roles of Nonbicarbonate Buffer System	✔				
		7.4 Acid base disturbances	✔				
		7.5 Systematic Acid-Base Classification	✔				
Unit 8	6	**Regulation of Respiration** 8.1Medullary respiratorycenter & Pontinerespirator ycenter	✔			10	LE, SE, SA
		8.2 Reflex control of breathing & Chemical control of breathing	✔				
		8.3 Ventilator responseto exercises	✔				
Unit 9	8	**Regulation of Cardiac Output and Blood Pressure** 9.1 Events of the cardiac cycle & Determinants of blood pressure	✔			10	LE, SE, SA
		9.2 Regulation of peripheral vasculature and cardiac output	✔				

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended books

- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book.Elsevier Health Sciences; 2019 Dec 18.
- Cairo JM. Mosby's Respiratory Care Equipment-E Book. Elsevier Health Sciences; 2017Aug 24.
- White G. Equipment theory for respiratory care. Cengage Learning; 2014 May 5.

SEMESTER-III

GENERAL PHARMACOLOGY

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcomes:

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

CO1: Define and describe the principles of pharmacology and pharmacotherapeutics.

CO2: Define absorption, distribution, metabolism and excretion of drugs.

CO3: Define and describe the pharmacological actions and therapeutic uses of drugs affecting systems- autonomic nervous system, cardiovascular system, blood, endocrine etc.

CO4: To have a basic knowledge of drugs used in the treatment of various infections.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	8	**General Pharmacology** 1.1 Introduction to Pharmacology 1.2 Routes of drug Administration 1.3Absorption & Distribution Metabolism Excretion 1.4 Pharmacodynamics - Mechanism of drug action- receptors 1.5 Factors modifying drug actions 1.6 Adverse drug reactions	√			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit II	6	**Autonomic Nervous System drugs** 2.1 Sympathomimetics 2.2 Alpha blockers 2.3 Beta-blockers 2.4 Cholinomimetics 2.5 Anticholinergics 2.6 Skeletal muscle relaxants	√			15	LE, SE, SA
Unit III	11	**Central Nervous System** **3.1** Opioid analgesics 3.2 Non-opioid analgesics (Prostaglandins) 3.3 NSAIDs 3.4 Ethyl alcohol 3.5 Sedative hypnotics 3.6 Antiepileptic drugs 3.7 Local anesthetics-1 3.8 Local anesthetics-2 3.9 General anesthetics- I 3.10 G A – II (PAM) 3.11 CNS stimulants	√			20	LE, SE, SA
Unit IV	9	**Cardio Vascular System Drugs** 4.1 Diuretics 4.2 Vasodilators (CCB's, Drugs acting on RAS) 4.3 Antihypertensives 4.4 Antianginal drugs	√			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		4.5 Pharmacotherapy of shocks 4.6 Cardiac glycosides 4.7 Cardioplegic drugs 4.8 Antiarrhythmic drugs 4.9 Primary solutions					
Unit V	6	**Blood** 5.1 Anaemia, erythropoietin 5.2 Anticoagulants 5.3 Anti platelet drugs 5.4 Fibrinolytics, 5.5 Lipid lowering drugs 5.6 Vit.D and calcium, folic acid, phosphate binders			√	5	SE, SA
Unit VI	1	**Endocrines** 6.1 Corticosteroids			√	5	SE, SA
Unit VII	9	**Chemotherapy** 7.1 General Principles of Chemotherapy 7.2 Sulfonamides 7.3 Penicillins 7.4 Cephalosporins 7.5 Broad spectrum antibiotics 7.6 Macrolides 7.7 Aminoglycosides 7.8 Chemotherapy of UTI 7.9 Drug Therapy of Tuberculosis	√			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHT AGE %	TYPE OF QUESTIONS
Unit VIII	10	**Miscellaneous topics** 8.1 Antihistamines 8.2 Antiemetics 8.3 Drugs used in bronchial asthma 8.4 Drugs used in bronchial asthma-2 8.5 Cough 8.6 Inhalational gases and emergency drugs 8.7 I V fluids 8.8 Metabolic and electrolyte imbalance 8.9 Immunosuppressants 8.10 Antiseptics and disinfectants		√		10	SE, SA

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books:

1. ShanBhag T V, Shenoy S& Nayak V.Pharmacology For Nurses, Elesever; 3rd edition.2023.
2. Udaykumar P. Textbook of Pharmacology for Dental and Allied Sciences. Jaypee Brothers Publishers; 4th edition. 2017.

RESPIRATORY THERAPY SCIENCE- I

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course outcome:

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

CO1: Describe the importance of infection control in respiratory care practices.

CO2: Identify a cardiac arrest scenario and perform basic cardiac life support.

CO3: Explain the importance of gas laws and physics.

CO4: Understand oxygen and other medical gas delivery systems; application and the related adjuncts.

CO5: Describe concept and application of humidity and aerosol therapy.

CO6: Apply the skills required to select the appropriate therapeutic modalities based on patient's need in clinical settings.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	5	**Basic CardiacLife Support** 1.1 Importance and application of Chain ofSurvival & Cardiopulmonary and cerebral resuscitation- Rationale, indication, Technique	✔			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.2 Difference between adults, children and infants CPR, AED and Choking management	✔				
		1.3 Airway management	✔				
Unit 2	5	**Introduction to Basic Respiratory Science Basic Physic s forthe Respiratory Therapist** 2.1 Behavior of gases, Gas pressure		✔		5	SE, SA
		2.2 Gas laws		✔			
Unit 3	5	**MedicalGases** 3.1 Manufacture and Properties of Medical Gases		✔		5	SE, SA
		3.2 Transporting / handling / storage / safety, Sizes / volumes, Color codes, Conversion factors / duration of contents, Cylinder markings	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 4	5	**Medical gas supply equipment** 4.1 Compressors, Concentrators, Liquid reservoirs systems, Piping systems		✔		5	SE, SA
		4.2 Single stage and Multistage regulators, Thorpe tube flow meters, Burden gauge flow meters, Flow restrictors, Compensated and Uncompensated Thorpe-tube flowmeters.		✔			
Unit 5	5	**Oxygentherapy** 5.1 Assessment of need and outcome	✔			10	LE, SE, SA
		5.2 Precautions and Hazards	✔				
		5.3 Delivery approach, Protocol basedOxygen therapy	✔				
		5.4 Delivery devices	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 6	5	**Hyper baric oxygen therapy** 6.1 Physiological effects, Methods of administration 6.2Indications and Contraindications, Complications and Hazards, Troubleshooting	✔			5	SE, SA
Unit 7	5	**Oxygen analyzer** 7.1 Physical oxygen analyzers, Electrical oxygen analyzers, Electrochemical oxygen analyzer		✔		5	SE, SA
Unit 8	5	**Artificial Resuscitator(Bag Valve Units)** 8.1 Types of Artificial Resuscitators & Specification and standards	✔			15	LE, SE, SA
		8.2 Indications and Techniques & Hazards Associated with Manual Resuscitators	✔				
		8.3 T- piece resuscitator	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 9	5	9.1 Physiology of Heat and Moisture Exchange, Indications for Humidification and Warming of Inspired Gases	✔			10	LE, SE, SA
		9.2 Bland Aerosol Therapy		✔			
		9.3 Aerosolized Drug Therapy	✔				
Unit 10	5	**Airway Clearance and Bronchial Hygiene** 10.1 Mechanism of Coughing, Physiologyof Airway Clearance Therapies & General Goals and Indications	✔			10	LE, SE, SA
		10.2 Determining the Need for Airway Clearance Therapy & Airway Clearance Methods	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		10.3 Indications, Contraindications, Complications, Assessment of need, Assessment of outcome, Types of suction	✔				
Unit 11	5	**Lung Expansion Therapy** 11.1 Incentive Spirometer	✔			10	LE, SE, SA
		11.2 Intermittent Positive-Pressure Breathing Devices	✔				
		11.3 Positive Airway Pressure (PAP)Devices	✔				
Unit 12	5	Noninvasive monitoringof Oxygen and Carbondioxide 12.1 Pulse oximetry & Co-oximetry	✔			10	LE, SE, SA
		12.2 End-tidal Capnography	✔				
		12.3 Transcutaneous monitoring		✔			

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books

- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book. Elsevier Health Sciences; 2019 Dec 18.
- Cairo JM. Mosby's Respiratory Care Equipment-E Book. Elsevier Health Sciences;2017 Aug 24.
- White G. Equipment theory for respiratory care. Cengage Learning; 2014 May 5.

PATIENT ASSESSMENT AND DIAGNOSTICS

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course outcome:

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

CO1: Identify the elements needed for patient encounter for those receiving or being evaluated for respiratory care.

CO2: Demonstrate knowledge and skills for history taking and interviewing patients with cardiopulmonary complaints.

CO3: Describe the causes and the common characteristics of cardiopulmonary symptoms.

CO4: Obtain, evaluate, and monitor vital signs of patients with cardiopulmonary deficiencies.

CO5: Perform physical examination in patients evaluated for respiratory care.

CO6: Interpret clinical laboratory data, electrocardiograph and Chest X-ray.

CO7: Explain the assessment, plan, implementation, and evaluation method and the problem,intervention, and plan method for documentation of patient assessment data.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	5	**Preparation forthe Patient Meeting** 1.1 Individualized Care	✔			15	LE, SE, SA
		1.2 Patient Involvement	✔				
		1.3 Encouraging Patient and Family Participation in Care and Safety	✔				
		1.4 Provider Collaboration	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 2	5	**MedicalHistory and Interview** 2.1 Patient Interview	✔			10	LE, SE, SA
		2.2 Cardiopulmonary History and ComprehensiveHealth History	✔				
		2.3 Reviewing the Patient's Medical Record	✔				
		2.4 Assessment Standards for Patients withPulmonary Dysfunction	✔				
Unit 3	5	**Cardiopulmonary Symptoms** 3.1 Cough & Sputum Production	✔			10	LE, SE, SA
		3.2 Hemoptysis & Shortness of Breath (Dyspnea)	✔				
		3.3 Chest Pain & Dizziness and Fainting(Syncope)	✔				
		3.4 Swelling of the Ankles & Fever, Chills, andNight Sweats	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 4	5	**Vital Signs** 4.1 Obtaining Vital Signs and Clinical Impression	✔			10	LE, SE, SA
		4.2 Frequency of Vital Signs Measurement	✔				
		4.3 Trends in the Vital Signs	✔				
		4.4 Temperature, Pulse, Respiratory rate and Blood Pressure	✔				
Unit 5	6	**Fundamentals Of Physical Examination** 5.1 Examination of the Head and Neck	✔			10	LE, SE, SA
		5.2 Lung Topography & Examination of the Thorax	✔				
		5.3 Examination of the Precordium	✔				
		5.4 Examination of the Abdomen: Inspection, Palpation, Percussion and Auscultation	✔				
		5.5 Examination of the Extremities	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 6	6	**NeurologicAssessment** 6.1 Functional Neuroanatomy Assessment of Consciousness & Cranial Nerve		✔		5	SE, SA
		6.2 Deep Tendon, Superficial, and BrainstemReflexes		✔			
		6.3 Vital Organ Function and the Neurologic System& Ancillary Testing of the Neurologic System		✔			
		6.4 Declaration of Brain Death: Guidelines, Apnea test	✔				
Unit 7	5	**ClinicalLaboratory Studies** 7.1 Clinical Laboratory Overview	✔			5	SE, SA
		7.2 Hematology		✔			
		7.3 Chemistry & Microbiology		✔			
		7.4 Histology and Cytology Skin Testing		✔			

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 8	6	**ArterialBlood Gas Sampling and Interpretation** 8.1 Indications for Blood Gas and Oximetry Analysis Sampling and Measurement	✔			10	LE, SE, SA
		8.2 Quality assurance		✔			
		8.3 Systematic Interpretation of Blood Gases	✔				
		8.4 Assessment of Oxygenation & Assessment of Acid-Base Balance: Observed and Calculated basic values	✔				
		8.5 Simple Acid-Base Imbalances and its compensation & Combined Acid-Base Disturbances	✔				
Unit 9	6	**Chest Radiography** 9.1 Introduction & Indications for the ChestRadiograph	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		9.2 Examination Radiographic Views & Evaluation of the Chest Radiograph	✔				
		9.3 Clinical and Radiographic Findings in LungDiseases	✔				
		9.4 Postprocedural Chest Radiograph Evaluation	✔				
Unit 10	6	**Electrocardiogram Interpretation** 10.1 Electrocardiogram: Cardiac Electrophysiology	✔			10	LE, SE, SA
		10.2 Conduction system of the Heart & Basic Electrocardiogram Waves	✔				
		10.3 Steps of Electrocardiogram Interpretation &Normal Sinus Rhythm	✔				
		10.4 Causes and Manifestations of Dysrhythmias & Identification of Common Dysrhythmias	✔				
Unit 11	5	**Documentation** 11.1 General Purposes of Documentation	✔			5	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		11.2 The Joint Commission and Legal Aspectsof the Medical Record		✔			
		11.3 Types of Medical Records OrganizingPatient Information & Charting Methods	✔				

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books

- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book.Elsevier Health Sciences; 2019 Dec 18.
- Cairo JM. Mosby's Respiratory Care Equipment-E Book. Elsevier Health Sciences; 2017 Aug 24.
- White G. Equipment theory for respiratory care. Cengage Learning; 2014 May 5.
- Butler TJ. Laboratory exercises for competency in respiratory care. FA Davis; 2013 Mar 8.
- James K. Stoller Wilkins' Clinical Assessment in Respiratory Care. 8th ed.
- Primary: Beasley, B. Understanding EKGs: A Practical Approach 5th edition

CARDIOPULMONARY DISEASES I

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Enumerate the pathological changes that occurs in the pulmonary system of patients suffering from cardiopulmonary diseases.

CO2: Describe and diagnose clinical features and outline the treatment of cardiopulmonary disease.

CO3: Appreciate the role of the respiratory therapist in the management and diagnosis of cardiopulmonary disease.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	3	**Cardinal manifestations and presentation** 1.1 Alteration in circulatoryand Respiratory Functions	✔			5	LE, SE, SA
Unit 2	3	**Respiratory Insufficiency and Respiratory Failure** 2.1 • Classification Background, Pathophysiology, Etiology and Management of Respiratory failure	✔			5	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 3	3	**Chronic Obstructive Pulmonary Disease (COPD), Chronic Bronchitis and Emphysema** 3.1 Anatomic alterations ofthe lungs associated with Chronic Bronchitis and Emphysema, Etiology, Diagnosis, Distinguishing features.	✔			5	LE, SE, SA
		3.2 Cardiopulmonary clinical manifestations, General management & GOLD guidelines	✔				LE, SE, SA
Unit 4	3	**Asthma** 4.1 Anatomic alterations, Etiology, Classification	✔			5	LE, SE, SA
		4.2 GINA guidelines, GeneralManagement, Respiratory Care protocol	✔				
Unit 5	3	**CysticFibrosis** 5.1 Anatomic alterations andEtiology	✔			5	LE, SE, SA
		5.2 Clinical manifestations &General management	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 6	3	**Bronchiectasis** 6.1 Anatomic alterations, Etiology, Clinical manifestations & General management	✔			5	LE, SE, SA
Unit 7	3	**Loss of alveolar volume -Atelectasis** 7.1 Anatomic alterations, Etiology, Clinical manifestations & General management	✔			5	LE, SE, SA
Unit 8	3	**Infectious Pulmonary DiseasePneumonia, Lung Abscess Formationand Important Fungal Diseases** 8.1 Anatomic alterations, Etiology, pathogens, viral pneumonia	✔			5	LE, SE, SA
		8.2Bronchiolitis Obliterans Organzing Pneumonia, Clinical manifestations & General management	✔				
Unit 9	3	**Tuberculosis (TB)** 9.1 Anatomic alterations, Etiology, Clinical manifestations & General management	✔			5	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 10	3	**PulmonaryEdema** 10.1 Anatomic alterations andEtiology, classification	✔			5	LE, SE, SA
		10.2Clinical manifestations &General management	✔				
Unit 11	3	**PulmonaryVascular Disease** 11.1 Pulmonary Embolism	✔			5	LE, SE, SA
		11.2 Pulmonary Hypertension	✔				
Unit 12	3	**Chest wall & spinal deformities- Pleural Effusion and Empyema** 12.1 Anatomic alterations, Etiology, Clinical manifestations & General management	✔			5	LE, SE, SA
Unit 13	3	**Chest wall& spinal deformities- kyphoscoliosis** 13.1 Anatomic alterations, Etiology, Clinical manifestations & General management	✔			5	LE, SE, SA
Unit 14	3	**Carcinomasof Lung** 14.1Anatomic alterations, Etiology, Clinical manifestations, Staging of cancer & General management	✔			5	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 15	3	**InterstitialLung Disease** 15.1 Anatomic alterations &Etiology.	✔			5	LE, SE, SA
		15.2Clinical manifestations &General management	✔				
Unit 16	3	**Inflammatory Lung Disease and itsPulmonary effects** 16.1 Obstructive sleep Apnea,Central sleep Apnea and Mixed Sleep Apnea	✔			5	LE, SE, SA
Unit 17	3	**Acute Respiratory DistressSyndrome (ARDS)** 17.1 Anatomic alterations, Etiology, Diagnostic criteria	✔			5	LE, SE, SA
		17.2 Clinical manifestations & General management, Recent update in ARDS management	✔				
Unit 18	3	**Guillain-Barré (GB) Syndrome** 18.1Anatomic alterations of the lungs associated with Gillian-Barré Syndrome, Etiology and Epidemiology &Clinical presentation	✔			5	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		18.2 Clinical manifestations& General management	✔				
Unit 19	3	**MyastheniaGravis (MG)** 19.1 Anatomic alterations ofthe lungs, Etiology and Epidemiology, Screening andDiagnosis	✔			5	LE, SE, SA
		19.2 Cardiopulmonary clinicalmanifestation and General management	✔				
Unit 20	3	**Cardiopulmonary Care and Assessment of Patients with Neuromuscular Disease** 20.1 Cardiopulmonary clinicalmanifestations, General management, Ventilatory management ofpatients	✔			5	LE, SE, SA

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended books

- Terry Des Jardins & George G. Burton: Clinical Manifestations and Assessment of Respiratory Disease. 8th edition. Cairo JM. Mosby's Respiratory Care Equipment-E Book. Elsevier Health Sciences; 2017 Aug 24.
- White G. Equipment theory for respiratory care. Cengage Learning; 2014 May 5.
- Harrison’s Principles of Internal Medicine.20th edition. James K. Stoller Wilkins' Clinical Assessment in Respiratory Care. 8th ed.

- Charles V. Pollack. Differential diagnosis of Cardiopulmonary Disease. 1st edition
- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book. Elsevier Health Sciences; 2019 Dec 18

HUMAN RIGHTS AND GENDER EQUITY

Course: VAC **Credits: 02** **No. of hours: 30 Hours**

➢ Course Outcome:

At the end of this course, students will gain knowledge on:

CO1: Basic Knowledge of Human Rights and its function and authorities in society and industry women's status, issues and gender equity.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	5	Human Rights 1.1 Human Rights – Meaning 1.2 Universal declaration of Human Rights	√			20	SE, SA
Unit II	5	Human Rights Advocacy 2.1 Global Advocacy of Human Rights; Amnesty International and Other Organizations 2.2 People's Union for Civil Liberty (PUCL) 2.3 Human Rights Commission in India 2.4 Minority Commission in India	√			25	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		2.5 Remedies Against Violation of Human Rights in India					
Unit III	5	Gender Equity Key Concepts- 3.1 Sex and Gender 3.2 Masculinity and Femininity 3.3 Patriarchy, Matriarchy 3.4 Gender roles and Attributes, Gender Division of Labor 3.5 Gender Bias 3.6 Gender Stereotypes 3.7 Need for Gender Sensitization	√			20	SA
Unit IV	5	Women's Status in India 4.1 Important Indicators-Sex Ratio, Education, Health, Nutrition, Maternal and Infant Mortality, Work Participation Rate, And Political Participation.	√			15	SE, SA
Unit V	5	Contemporary Women's Issues 5.1 Discrimination Against Girl Child	√			15	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		5.2 Violence Against Women 5.3 Problems of health and nutrition 5.4 Women's Education and Gender Bias in Education 5.5 Trafficking in women 5.6 Globalization and Impact on Women					
Unit VI	5	State Initiatives for Gender Equity 6.1 Constitutional Rights of Women 6.2 Laws Pertaining to Women 6.3 The National and State Commissions for Women		√		05	SE

- **SE**- Short Essay**, SA-** Short Answer

Recommended Books:

- Parvathy Appaiah,Human Rights, Gender Equity and Environmental Studies, Shivam Books publishers, 2012.
- Parvathy Appaiah,Human Rights, Gender Equity and Environmental Studies, Jai BharathPrakashan publishers, 2016.
- Parvathy Appaiah,Human Rights, Gender Equity and Environmental Studies, Jai BharathPrakashan publishers, 2018-19.
- NirmalChiranjivi:Human Rights in India,New Delhi,OUP,2001.

CLINICAL TRAINING I

Course: SEC **Credits: 04** **No. of hours: 120 Hours**

➢ Course Outcome:

This course will provide a practical and demonstrative approach about the patient contact techniques, oxygen therapy and artificial airways and various devices in respiratory care. It comprises of clinical postings and practicum and demonstration classes.

At the end of the course, the student should be able to know:

CO1: Practical demonstration for the topics learnt during theory classes.

CO2: Clinical postings to enhance clinical skills learnt during practical.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %
Unit I	10	Practicum on patient communication & medical history taking	✔			10
Unit II	10	Practicum on Universal precautions & hand washing hygiene	✔			10
Unit III	15	Practicum on assessment of vitalsigns & physical assessment of the Thorax & Extremities	✔			10
Unit IV	10	Practicum and demonstration ofmedical gas cylinders, oxygen concentrators, oxygen therapy devices	✔			10

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %
Unit V	15	Practicum on Assessment of Respiratory system, CVS	✔			10
Unit VI	15	Practicum and demonstration on use of Aerosol & Humidification delivery devices	✔			10
Unit VII	20	Practicum and demonstration forvarious artificial airways	✔			15
Unit VIII	10	Practicum and demonstration of Chest Physiotherapy Procedures & Bronchial hygiene techniques	✔			10
Unit IX	15	Practicum & demonstration of Basic Life Support skills	✔			15

SEMESTER-IV

CARDIOPULMONARY PHARMACOLOGY

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course outcome:

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

CO1: Understand the fundamental scientific principles of aerosolized medications to treat lung diseases.

CO2: Discuss various classification of drug used to treat bronchospasm and cause bronchodilation, their mechanism of action, effects and side effects on cardiopulmonary systems.

CO3: Discuss various types of mucous controlling agents and their mode of actions.

CO4: Understand the mechanism of drugs used to control asthma symptoms including Corticosteroids and NSAIDs.

CO5: Discuss the various anti-infective drugs used to treat patients with infectious lung diseases, their clinical effectiveness via using the inhalational route.

CO6: Discuss the principles of drugs used to treat various cardiovascular diseases and their effectiveness & potential hazards.

CO7: Describe all the drugs used to manage life threatening conditions including arrhythmias and cardiac arrest.

CO8: Recommend modifications in the Respiratory Care plan based on the patient's response to Respiratory Care medications.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	8	**Administration of Aerosolized& Instilled Medications** 1.1 Drug administration	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.2 Device used to administer aerosolized drugs	✔				
		1.3 Selection of aerosol device		✔			
		1.4 SVNs and MDIs	✔				
Unit 2	8	**Drugs affecting Respiratory system** 2.1 Pathophysiology of bronchoconstriction	✔			15	LE, SE, SA
		2.2 Sympathomimetic / adrenergicbronchodilators	✔				
		2.3 Parasympatholytic drugs.	✔				
		2.4 Xanthine drugs	✔				
Unit 3	8	**Mucus Controlling Therapy** 3.1 Classification of mucus controlling therapy	✔			15	LE, SE, SA
		3.2 Physical characteristics of the mucociliary system of the lung	✔				
		3.3 MOA of mucolytic drug	✔				
		3.4 Hazards and contraindication of mucolyticdrugs	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 4	8	**Anti- Inflammatory and Anti- Asthma Agents** 4.1 Pathophysiology of inflammation andasthma	✔			15	LE, SE, SA
		4.2 Hypothalamic Pituitary Adrenal axis	✔				
		4.3 physiological effects of corticosteroids	✔				
		4.4 MOA, Adverse effect, contraindication of corticosteroids	✔				
Unit 5	8	**Non- SteroidalAnti-Asthma Agents (NSAAA)** 5.1 Pathophysiology of asthma	✔			10	LE, SE, SA
		5.2 MOA, mode of administration ofNSAAA drugs	✔				
		5.3 Hazards, contraindication of NSAAA drugs	✔				
Unit 6	6	**Anti- InfectiveAgents** 6.1 Rational for the usage of aerosolized anti-infective agents	✔			10	LE, SE, SA
		6.2 MOA of anti-infective agents	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		6.3 Side effects and hazards associated with anti-infective agents	✔				
Unit 7	6	**Drugs affecting Cardiovascular system** 7.1 Anti- hypertensive drugs	✔			10	LE, SE, SA
		7.2 Anti-arrhythmic drugs	✔				
		7.3 Drugs effecting circulation	✔				
		7.4 Inhaled nitric oxide	✔				
Unit 8	8	**Drugs usedin Acute Care** 8.1 Drugs used in Cardiac arrest	✔	✔		15	LE, SE, SA
		8.2 Drugs used in Pre-arrest	✔				
		8.3 Drugs used in Acute Coronary Syndrome	✔				
		8.4 Drugs used in Cerebrovascular Accidents	✔				

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended books

- Douglas S. Gardenhire Rau's Respiratory Care Pharmacology 9th Edition
- K.D. Tripathi, Essentials of Medical Pharmacology, 6th edition, Jaypee brother's medicalpublishers (P) Ltd
- Lippincott's Illustrated Reviews: Pharmacology (6th edition)

- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book. Elsevier Health Sciences; 2019 Dec 18

RESPIRATORY THERAPY SCIENCE II

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcomes:

At the end the course, the student should be able to:

CO1: Understand and perform Advanced cardiac life support.

CO2: Understand various therapeutic and technical aspects of Airway management.

CO3: Understand the importance of various systemic monitoring and physiological monitoring.

CO4: Apply the skills required to select the appropriate therapeutic modalities based on patient's need in clinical settings.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	6	**Advanced Cardiovascular Life Support** 1.1 Review of basic cardiac life support & cardiac electrophysiology		✔		15	LE, SE, SA
		1.2 Cardiac arrest rhythms & management (Shockable & nonshockable) and Peri Arrest Rhythms- Tachy and Bradyarrhythmias	✔				
		1.3 Peri Arrest Rhythms- Techy and Brady arrhythmias	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.4 Post Cardiac Arrest, Acute Stroke &Acute coronary Syndrome Management	✔				
		1.5 Defibrillator & Pacer-Technical aspect and Clinical application	✔				
Unit 2	8	**AirwayManagement** 2.1Review of Airway Anatomy, Airway assessment and Advanced Airway Adjuncts	✔			15	LE, SE, SA
		2.2 Aids & adjuncts to Endotracheal Intubation and Blind Intubation	✔				
		2.3Confirmation ofdefinitive airway & Complications of Intubation	✔				
		2.4 Surgical Airway Devices and Specialized Endotracheal Tubes	✔				
		2.5PositioningAdjuncts, Cuff manometer, Extubation andDecannulation	✔				
Unit 3	6	**Bronchoscopy** 3.1 Types of bronchoscopies-Flexible and Rigid, Parts, physics and principle of flexible bronchoscopes	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.2Indications, Contraindications, Monitoring, Complications, Assessment of need and outcome andInfection control andsterilization of bronchoscopes	✔				
Unit 4	6	**Intercostal Drains andTubes** 4.1 Basic principles of chest tube	✔			10	LE, SE, SA
		4.2 Chest Drainage system- Indications, technical aspects, set up and maintenance	✔				
		4.3 Troubleshooting	✔				
Unit 5	6	**Circulatory Assist Devices** 5.1Extra Corporeal Life Support- ECLS		✔		10	LE, SE, SA
		5.2 Extracorporeal Membrane Oxygenation (ECMO) and ECCO2R	✔				
Unit 6	6	**BloodGas Analyzer** 6.1 Blood gas machine- Calibration and Quality control of blood gas measuring systems, Blood gas sensor blocks and POC Testing		✔		5	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 7	8	**RespiratoryMonitoring** 7.1Oxygen Content Alveolar-Arterial Oxygen Tension Difference, Alveolar gas equation	✔			10	LE, SE, SA
		7.2 PaO2/ FiO2 Ratio, SpO2/FiO2 Ratio, Oxygenation Index, Oxygen Saturation Index, Respiratory Quotient, V/Q ratio, Quantification of Shunt	✔				
		7.3 Monitoring lung and chest wall resistance, compliance,Minute ventilation-Wright's spirometry	✔				
		7.4 Peak inspiratory and expiratory flow meters-Indication, technique, contraindications	✔				
Unit 8	8	**Cardiovascularand Hemodynamic Monitoring** 8.1Central Venous Pressure & Pulmonary Artery Pressure	✔			10	LE, SE, SA
		8.2 Arterial BP monitoring	✔				
		8.3 Cardiac output monitoring	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 9	6	**NeurologicMonitoring** 9.1 Conscious levels- Alert, Confused, Lethargic, Obtunded, Stupor, Coma; Glasgow Coma Scale Score; Pupillary Response, Corneal response, Eye movements	✔			10	LE, SE, SA
		9.2Respiratory Rate and Pattern- Abnormal patterns	✔				
		9.3Intracranial Pressure Monitoring		✔			
Unit 9	6	**Assessment and monitoring ofother systems** 10.1 Monitoring Renal Function		✔		5	SE, SA
		10.2 Monitoring Liver Function		✔			
		10.3 Nutritional Monitoring		✔			

❖ **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books

- Mosby's Respiratory Care Equipment, J.M. Cairo, 10the Edition
- Mechanical Ventilation Physiological and Clinical Application by Susan Pilbeam andJim Cairo, 7th edition
- Equipment theory for Respiratory care by Gary C. White, 5thEdition
- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book.Elsevier Health Sciences; 2019 Dec 18.

CARDIOPULMONARY DISEASES II

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Enumerate the pathological changes that occurs in the pulmonary system of patients suffering from cardiopulmonary diseases.

CO2: Describe and diagnose clinical features and outline the treatment of cardiopulmonary disease.

CO3: Appreciate the role of the respiratory therapist in the management and diagnosis of cardiopulmonary disease.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	5	**Congestive heart failure** 1.1 Pathophysiology	✔			10	LE, SE, SA
		1.2 Diagnosis	✔				
		1.3Management	✔				
Unit 2	5	ValvularHeart Disease 2.1 Mitral and tricuspid Regurgitation, Mitral and tricuspidstenosis, Aortic andpulmonary valve Stenosis and Regurgitation	✔			5	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 3	5	Cardiomyopathy, Myocarditis and Endocarditis: Pathophysiology, Diagnosis& Management	✔			5	SE, SA
Unit 4	5	**Cardiactamponade and Pericarditis** 4.1 Pathophysiology& Diagnosis	✔			10	LE, SE, SA
		4.2 Management	✔				
Unit 5	5	**Cardiothoracic Surgical Conditionsand Prolonged Assisted Circulation** 5.1 Indication, Contraindications and Complications	✔			10	LE, SE, SA
		5.2 pre-operative management	✔				
		5.3 post-operative management	✔				
Unit 6	5	**Coronaryand Peripheral Vascular Disease, Hypertension** 6.1 Primary andSecondary hypertension	✔			5	SE, SA
		6.2Grades of hypertension &Accelerated hypertension	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 7	5	**IschemicHeart Disease** 7.1 Myocardialinfarction	✔			10	LE, SE, SA
		7.2 Stable and Unstable Angina	✔				
		7.3 Acute Coronary Syndrome	✔				
Unit 8	5	**Shock** 8.1 Definition, Classification, Pathophysiologyand General management	✔			10	LE, SE, SA
		8.2 Hypovolemic shock &Cardiogenic shock	✔				
		8.3 Obstructive shock & Distributive shock	✔				
Unit 9	5	**Pulmonary Manifestations of Central Nervous System Diseases** 9.1 Acute Stroke: Ischemic stroke and Hemorrhagic stroke: Definition, Classification, Risk factors, Management	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		9.2 Seizure and Epilepsy, Traumatic BrainInjury and Respiratory Manifestations	✔				
		9.3 Hypoxemic encephalopathy and Coma	✔				
Unit 10	5	**Environmentaland occupational disorders** 10.1Occupational Disorders	✔			5	SE, SA
		10.2 Environmental Disorders	✔				
Unit 11	5	**Trauma And Management** 11.1 Cervical Spine Injury, stabilization, management	✔			10	LE, SE, SA
		11.2 Extremity trauma- long bonefractures- Fat Embolism	✔				
		11.3The DeadlyDozen of ChestTrauma and Management	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 12	5	**An Introduction to Sleep Disorders- Cardiopulmonary Manifestations** 12.1 Obstructive sleep Apnea, Central sleep Apneaand Mixed Sleep Apnea	✔			10	LE, SE, SA
		12.2 Sleep-related hypoventilation and hypoxemia syndromes	✔				
		12.3 Diagnosis of obstructive sleep apnea	✔				

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books

- Mosby's Respiratory Care Equipment, J.M. Cairo, 10the Edition
- Mechanical Ventilation Physiological and Clinical Application by Susan Pilbeam andJim Cairo, 7th edition
- Equipment theory for Respiratory care by Gary C. White, 5thEdition.
- Murray and Nadel's Textbook of Respiratory Medicine.6th edition.
- Terry Des Jardins & George G. Burton: Clinical Manifestations and Assessment ofRespiratory Disease. 8th edition.
- Harrison's Principles of Internal Medicine.20th edition.
- Michael Grippi: Fishman's Pulmonary Diseases and Disorders. 5th edition
- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book.Elsevier Health Sciences; 2019 Dec 18.

MECHANICAL VENTILATION I

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Understand the basic terminologies and technical concepts of Mechanical Ventilation.

CO2: Differentiate between Volume Ventilation, Pressure Ventilation and other hybrid modes.

CO3: Identify Indications, complications, and physiologic effects of mechanical ventilation.

CO4: Apply appropriate ventilator, initial mode & ventilator parameters.

CO5: Understand the concept of Noninvasive Ventilation.

CO6: Identify various types of technical and clinical problems encountered during mechanical ventilation of critically ill patients, and describe the steps that can be usedto protect a patient when problems occur.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	5	**Terminologies and FunctionalConcepts of Mechanical Ventilation** 1.1 Physiological terms and Concepts related to Mechanical Ventilation		✔		10	LE, SE, SA
		1.2 Normal Mechanics of Spontaneous Ventilation	✔				
		1.3 Lung Characteristics and Time Constants	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.4 Types of Mechanical Ventilation & Pressures in Positive Pressure Ventilation	✔				
Unit 2	5	**Technicalaspects of Mechanical Ventilator** 2.1 Historical Perspective on Ventilator Classification		✔		5	SE, SA
		2.2 Internal Function, Power Source or Input Power and Control Systems and Circuits		✔			
		2.3 Power Transmission and Conversion System and Calibration of specific ventilators		✔			
Unit 3	6	**Mechanicaldelivery of aBreath** 3.1 Basic Model of Ventilation in the Lung during Inspiration and Factors Controlled and Measured During Inspiration	✔			10	LE, SE, SA
		3.2 Overview of Inspiratory Waveform Control and Phases of a Breath & Phase Variables	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.3 Types of Breaths & Chatburn's classification-Nomenclature		✔			
Unit 4	5	**Assessing and establishing the need for Mechanical Ventilation** 4.1 Patient History and Diagnosis	✔			10	LE, SE, SA
		4.2 Respiratory Failure and Physiological Measurements in Acute Respiratory Failure	✔				
		4.3Overview of Criteria for Mechanical Ventilation and Possible Alternatives to Invasive Ventilation	✔				
Unit 5	6	**Modesof Mechanical Ventilation** 5.1 Modes of Invasive Ventilation	✔			15	LE, SE, SA
		5.2 Modes of Non-invasive ventilation	✔				
		5.3 Dual and hybrid Modes of Ventilation	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 6	5	**InitialVentilator Settings** 6.1 Determinants during Volume controlled Ventilation and Special considerations	✔			10	LE, SE, SA
		6.2 Setting Baseline Pressure– PEEP and election of other parameters- FiO2, Sensitivity- Pressure and flow, Alarms, Sigh	✔				
		6.3 Overview of Disease specific ventilation- Initial settings	✔				
Unit 7	5	**PatientAssessment on Mechanical Ventilation** 7.1Documentation/Charting and Initial assessment and serial assessments	✔			10	LE, SE, SA
		7.2 Airway Pressure monitoring, Vital Signs, Blood Pressure, and Physical Examination of the Chest	✔				
		7.3Management of Endotracheal Tube & Tracheostomy Tube Cuffs and Monitoring Compliance and Airway Resistance	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 8	6	**Assessment of Respiratory Function** 8.1 Noninvasive Measurements of Blood Gases	✔			10	LE, SE, SA
		8.2 Pulse Oximetry, Capnography (Capnometry), Exhaled Nitric Oxide Monitoringand Transcutaneous Monitoring	✔				
		8.3 Overview of Indirect Calorimetry & Indirect Calorimetry and Metabolic Measurements and Respiratory Mechanics	✔				
Unit 9	6	**HemodynamicMonitoring** 9.1 Review of Cardiovascular Principles		✔		5	SE, SA
		9.2Hemodynamic Measurements & Interpretation of Hemodynamic Profiles and Clinical Applications	✔				
Unit 10	5	**Sedatives, Analgesics and Muscle Relaxants** 10.1Muscle relaxants, Sedatives and Analgesics	✔			5	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 11	6	**NoninvasivePositive-Pressure Ventilation** 11.1 Types of Noninvasive Ventilation Techniques, Indications, Patient Selection Criteria, Equipment Selection for Noninvasive Ventilation, Selection of PatientInterface	✔			10	LE, SE, SA
		11.2 Setup, Preparation, Monitoring and Adjustment of Noninvasive Ventilation & Aerosol Delivery in Noninvasive Ventilation	✔				
		11.3 Complications and Weaning from & Discontinuing Noninvasive Ventilation	✔				

❖ **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books

- Mechanical Ventilation Physiological and Clinical Application by Susan Pilbeam andJim Cairo, 7th edition
- Susan Pilbeam and Jim Cairo. Workbook for Mechanical Ventilation Physiological and ClinicalApplication. 6th edition
- Murray and Nadel's Textbook of Respiratory Medicine.6th edition.
- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book. Elsevier Health Sciences; 2019 Dec 1

CLINICAL TRAINING II

Course: SEC **Credits: 04** **No. of hours: 120 Hours**

➢ Course Outcomes:

This course will provide a practical and demonstrative approach about diagnostic procedures and case study. It comprises of clinical postings and practicum and demonstration classes.

At the end of the course, the student should be able to know:

CO1: Practical demonstration for the topics learnt during theory classes.

CO2: Clinical postings to enhance clinical skills learnt during practical.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %
Unit I	10	Practicum & demonstrationon ACLS procedures	✔			10
Unit II	10	Practicum & demonstrationon use advanced artificial airways	✔			10
Unit III	15	Practicum & demonstrationon bronchoscopy	✔			10
Unit IV	10	Practicum & Demonstrationon Chest tube drainage procedures	✔			10
Unit V	15	Practicum & Demonstration on Assessment of CVS, CNSand other organ system	✔			10
Unit VI	15	Practicum on Classification of modes & disease specific mechanical ventilation management	✔			10

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %
Unit VII	20	Practicum & Demonstration on equipment selection & initiation & weaning of non-invasive ventilation	✔			15
Unit VIII	10	Practicum & Demonstrationon Initiation of Mechanical Ventilation	✔			10
Unit IX	15	Practicum & Demonstrationon maintenance of Mechanical Ventilator & Monitoring of patient on mechanical ventilator.	✔			15

SEMESTER-V

PULMONARY FUNCTION TESTS AND IMAGING

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Identify all common pulmonary function testing lab equipment's.

CO2: Explain the methods for performing quality control of PFT system.

CO3: Perform spirometry, DLCO tests.

CO4: Perform body plethysmography and bronchial provocation tests.

CO5: Interpret thoracic imaging like Chest X ray, CT Chest.

CO6: Perform and interpret Lung, Airway and Diaphragmatic ultrasound.

CO7: To assess the validity of all of the above-mentioned tests.

CO8: Analyze and interpret all the above-mentioned tests.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	6	**Introduction to pulmonary function testing** 1.1 Types and Indications	✔			5	SE, SA
		1.2 Preliminaries to PatientTesting	✔				
		1.3 Test Performance and Sequence	✔				
Unit 2	6	**Pulmonary Function Testing Equipment's** 2.1 Volume-Displacement Spirometers	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		2.2 Flow-Sensing Spirometers	✔				
		2.3Body Plethysmographs	✔				
		2.4 Breathing Valves	✔				
		2.5 Pulmonary Gas Analyzers		✔			
		2.6 Computers for Pulmonary Function Testing	✔				
Unit 3	6	**Spirometry** 3.1 Description, Technique, Significance and Pathophysiology Acceptabilityand Repeatability for Spirometry Results	✔			10	LE, SE, SA
Unit 4	6	**Diffusioncapacity tests** 4.1 Diffusion Capacity of Lungfor Cardon Monoxide (DLCO)or Transfer Factor of Lung for Carbon Monoxide (TLCO)	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 5	8	**Lung volumes, airway resistance and gas distributiontests** 5.1Lung Volumes: FunctionalResidual Capacity, Residual Volume, Total Lung Capacity,and Residual Volume/Total Lung Capacity Ratio	✔			15	LE, SE, SA
		5.2Airway Resistance and Conductance (Body plethysmograph)	✔				
		5.3 Gas Distribution Tests: Single-Breath Nitrogen Washout, Closing Volume, and ClosingCapacity	✔				
Unit 6	8	**Cardiopulmonary exercise testing** 6.1 Exercise Protocols Exercise Workload Cardiovascular Monitors During Exercise	✔			15	LE, SE, SA
		6.2 Oxygen Consumption, Carbon Dioxide Production,and Respiratory Exchange Ratio During Exercise	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		6.3Exercise Blood Gases	✔				
		6.4 Cardiac Output During Exercise	✔				
Unit 7	6	**Bronchialprovocation tests** 7.1 Bronchial provocation challenge testing: Indications, Contraindications, Techniqueand Complications	✔			10	LE, SE, SA
Unit 8	6	**Specializedpulmonary function test regimens and quality markers** 8.1Specialized Pulmonary Function Test Regimens and Quality Markers	✔			10	LE, SE, SA
		8.2 Quality System Essentials					
Unit 9	8	**Imaging** 9.1 Chest Radiology-Review	✔			15	LE, SE, SA
		9.2 Basics of Computed Tomography of Chest	✔				
		9.3Basics of Magnetic Resonance Imaging of Thorax	✔				
		9.4 Ultrasonography	✔				

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended books

- Madama, Vincent C. Pulmonary Function Testing and Cardiopulmonary Stress Testing. 2nd edition
- Ruppel, Gregg L. Manual of Pulmonary Function Testing. 11th edition Murray and Nadel'sTextbook of Respiratory Medicine.7th edition.
- Textbook of Radiology for CT and MRI Technicians with MCQs
- ISCCM Manual for Critical care ultrasound.
- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book.Elsevier Health Sciences; 2019 Dec 18.

MECHANICAL VENTILATION II

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course outcome:

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

CO1: Describe ventilation approaches for various diseases.

CO2: Explain the effect of mechanical ventilation on pulmonary and extra pulmonary system.

CO3: Describe the concept of Long-term Ventilation.

CO4: Identify the normal and abnormal ventilator graphics.

CO5: Select appropriate weaning criteria for ventilated patients.

CO6: Identify and troubleshoot ventilator and patient related problems.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	4	**Disease Specific VentilationStrategies** 1.1 Chronic Obstructive Pulmonary Diseases, Asthma	√			15	LE, SE, SA
		1.2 Neuromuscular Disorders,Closed Head Injury	√				
		1.3 Pneumonia, Acute Respiratory Distress Syndrome	√				
		1.4 Pulmonary Edema, ILD	√				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 2	4	**Ventilator Graphics** 2.1 Relationship of Flow, Pressure, Volume, and Time	√			10	LE, SE, SA
		2.2 Scalars, Curves, and Loops	√				
		2.3 Assessment of PulmonaryMechanics		√			
		2.4 Assessing Patient-Ventilator Asynchrony andadvanced application	√				
Unit 3	4	**Patient-Ventilator Management Strategies** 3.1 Troubleshooting Ventilation Abnormalities	√			10	LE, SE, SA
		3.2 Airway Clearance during Mechanical Ventilation	√				
		3.3 Administering Aerosols to Ventilated Patients	√				
		3.4 Additional Patient Management Techniques and Therapies in Ventilated Patients		√			

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 4	8	**Acute Respiratory Distress Syndrome and Mechanical Ventilation** 4.1 Pathophysiology of ARDS - The inflammatory Cascade	√			10	LE, SE, SA
		4.2 Lung-Protective Strategies: Setting Tidal Volume and Pressures in ARDS	√				
		4.3 Long-Term Follow - Up on ARDS		√			
		4.4 Recruitment Maneuvers in ARDS - Prone ventilation	√				
		4.5 Basics of Oxygenation using FIO2, PEEP Studies & weaning from PEEP	√				
Unit 5	6	**Extra-pulmonary Effects of Mechanical Ventilation** 5.1 Effects of Positive-Pressure Ventilation on Heart and the great vessels		√		10	LE, SE, SA
		5.2 Physiological Effects and Complications of Mechanical Ventilation	√				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		5.3 Effects of Mechanical Ventilation on Renal Function, Liver Function, and Gastrointestinal Function		√			
		5.4 Effects of Mechanical Ventilation on Intracranial Pressure and Cerebral Perfusion		√			
		5.5 Nutritional Complications during Mechanical Ventilation			√		
Unit 6	8	**Effects of Positive-Pressure Ventilation on the Pulmonary System** 6.1 Lung Injury with Mechanical Ventilation	√			10	LE, SE, SA
		6.2 Effects of Mechanical Ventilation on Gas Distribution and Pulmonary Blood Flow	√				
		6.3 Respiratory and Metabolic Acid–Base Status in Mechanical Ventilation	√				
		6.4 Hazards of Oxygen Therapy with Mechanical Ventilation	√				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		6.5 Ventilator-Mechanical and Operational Hazards	√				
		6.6 Complications of the Artificial Airway	√				
Unit 7	3	**Ventilator-Associated Events** 7.1 Ventilator associated infections- Ventilator-Associated Pneumonia,		√		5	SE, SA
		7.2 Epidemiology, Pathogenesis, Diagnosis, Tretament and Prevention strategies of Ventilator-Associated Pneumonia	√				
Unit 8	3	**Troubleshooting during Mechanical Ventilation** 8.1 Identifying the Patient in Sudden Distress, Classification of problems & Common alarm situations	√			5	SE, SA
		8.2 Use of Graphics to Identify Ventilator Problems	√				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 9	5	**Liberation and Discontinuation from Mechanical Ventilation** 9.1 Liberation/ Weaning Techniques, Criteria and Assessment	√			10	LE, SE, SA
		9.2 Non-respiratory Factors That May Complicate Weaning		√			
		9.3 Sedation Strategies and Protocols		√			
		9.4 Weaning Protocols	√				
		9.5 Withholding and Withdrawing Ventilator Support	√				
Unit 10	5	**Long-Term Ventilation** 10.1 Goals of Long-Term Mechanical Ventilation and Patient	√			5	SE, SA
		10.2 Complications of Long- Term Positive Pressure Ventilation	√				
		10.3 Equipment Selection, Ancillary Equipment and Equipment Cleaning for Home Mechanical Ventilation	√				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 11	10	**Advances and Adjuncts in Mechanical Ventilation** 11.1 Advanced modes like Airway Pressure Release Ventilation, High-Frequency Oscillatory Ventilation, Liquid Ventilation	√			10	LE, SE, SA
		11.2 Advanced modes like Adaptive Support Ventilation, Pressure Regulated Volume Control, Proportional Assist Ventilation, Volume Support Ventilation	√				
		11.3 Advanced technologies like Automatic Tube Compensation, Closed loop weaning, Intelligent ventilation		√			
		11.4 Anesthesia machine-Components and working principles, Heliox Therapy, Inhaled Nitric Oxide therapy	√				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		11.5 Neurally Adjusted Ventilatory Assist- Adjuncts, Diaphragm Electrical Activity Monitoring	√				

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books

- Mosby's Respiratory Care Equipment, J.M. Cairo, 10the Edition
- Mechanical Ventilation Physiological and Clinical Application By Susan Pilbeam andJim Cairo, 7th edition
- Susan Pilbeam and Jim Cairo. Workbook for Mechanical Ventilation Physiological and ClinicalApplication. 6th edition
- Murray and Nadel's Textbook of Respiratory Medicine.6th edition.
- Vijay Deshpande, T.R Chandershekhar. Mechanical Ventilation: Clinical Application 2nd edn.
- Kacmarek RM, Stoller JK, Heuer A. Egan's Fundamentals of Respiratory Care E-Book.Elsevier Health Sciences; 2019 Dec 18.

ESSENTIALS OF CRITICAL CARE

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Explain the initial and ongoing assessment of critically ill or injured patients.

CO2: Understand common ICU cases, disease presentation and the disease process.

CO3: Identify and understand diagnostic tests that are commonly used in ICUs, that includes imaging and laboratory tests.

CO4: Evaluate the findings of assessment and interpret abnormal physiological parameters and observations to identify patients who are likely to have a critical physiological decline.

CO5: Assist and be the part of ICU team, in dealing with sudden deterioration of the critically ill patient.

CO6: Develop and integrate clinical skills and academic knowledge in order to practice advanced assessment, life support and therapeutic skills, within the scope of practice.

CO7: Prepare equipment and devices related to cardiorespiratory support and airway management in emergency and elective scenarios.

CO8: Act as a patient advocate, when it comes to patient safety and quality assurance in the caring of critically ill patients.

CO9: Engage in the delivery of high-quality evidence based multidisciplinary care as either a team member or team leader, upon the crisis scenarios.

COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	5	**Assessment of Critically Ill** 1.1 Subjective and Objective Patient Assessment	✔			15	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.2 Neurological and Respiratory Assessment	✔				
		1.3 Cardiovascular, circulatoryand GI assessment		✔			
Unit 2	5	**Monitoring inCritical Care** 2.1 waveform monitoring and interpretation		✔		10%	LE, SE, SA
		2.2 ICU bundles	✔				
		2.3 FAST examination		✔			
Unit 3	5	**Diagnostic Tests in Critical Care** 3.1 imaging in ICU	✔			5	SE, SA
		3.2 CT scan		✔			
		3.3 Laboratory interpretations		✔			
Unit 4	5	**Resuscitation inICU** 4.1 Advanced Cardiac Lifesupport	✔			10	LE, SE, SA
		4.2 Targeted temperature management	✔				
		4.3 Extracorporeal CPR		✔			
Unit 5	5	**Acute Respiratory Failure, Mechanical Ventilation and other Adjuncts** 5.1 Acute Respiratory Failure	✔			5	SE, SA
		5.2 Disease specific noninvasive ventilation strategies	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		5.3 Disease specific invasive ventilation strategies	✔				
		5.4 ECLS	✔				
Unit 6	5	**Oxygenation, Circulation and Acid-Base Disorders** 6.1 Principles of Oxygentherapy	✔			10	LE, SE, SA
		6.2 Oxygen balance	✔				
		6.3 ODC curve	✔				
		6.4 Determinants of Oxygen balance	✔				
		6.5 Acid base disorders	✔				
Unit 7	5	**Circulatory impairments** 7.1 Types of shock	✔			5	SE, SA
		7.2 Systemic changes in warm and cold shock	✔				
		7.3 Fluid resuscitation		✔			
		7.4 Fluid responsiveness assessment		✔			
Unit 8	5	**Basics of Neuro and Neurosurgical Care** 8.1 Stroke	✔			5	SE, SA
		8.2 Intracranial and Central venous pressure monitoring		✔			
		8.3 Brain protective ventilation strategy	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		8.4 Brain death and apnea tests	✔				
Unit 9	5	**ICU Pharmacology** 9.1 Antiarrhythmics, Anticoagulants and thrombolytics	✔			5	SE, SA
		9.2 Inotropes and other vasoactive drugs	✔				
		9.3 Analgesics ,Sedatives and Skeletal muscle relaxants		✔			
		9.4 Sedation Scale		✔			
Unit 10	5	**Common ICU scenarios and management** 10.1 Sepsis and Pulmonary embolism		✔		10	LE, SE, SA
		10.2 Inter and Intra hospital transport of Ventilated patients	✔				
		10.3 GI Bleed, Acute pancreatitis and Hepato-pulmonary Syndrome		✔			
		10.4 Obstetric disorders and OP poisoning		✔			
		10.5 Leptospirosis, Malaria and Dengue		✔			
Unit 11	5	**Common ICUProcedures** 11.1Oral and Nasal Endotracheal Intubation-	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		11.2Percutaenous Tracheostomy	✔				
		11.3 Arterial Line and central line insertion	✔				
		11.4 Needle Thoracocentesis and Intercostal Drainage insertion	✔				
		11.5 Bronchoscopy	✔				
Unit 12	5	**Ethicsin Critical Care Medicine** 12.1 Do Not Attempt Resuscitate Scenarios and End of the Life Care	✔			5	SE, SA
		12.2 Organ donation		✔			

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books

- Mosby's Respiratory Care Equipment, J.M. Cairo, 10the Edition
- Mechanical Ventilation Physiological and Clinical Application by Susan Pilbeam andJim Cairo, 7th edition
- Susan Pilbeam and Jim Cairo. Workbook for Mechanical Ventilation Physiological and ClinicalApplication. 6th edition.
- Oh's Intensive Caremanual, 7th Edition
- Irwin and Rippe's Manual of Intensive care medicine, 6th edition
- Paul Marino's The ICU Book, 3rd Edition
- Vijay Deshpande, T.R Chandershekhar. Mechanical Ventilation: Clinical Application 2nd ed.

CLINICAL TRAINING - III

Course: SEC **Credits: 04** **No. of hours: 120 Hours**

➢ Course Outcomes:

This course will provide a practical and demonstrative approach aboutBLS, ACLS, initiation and weaning of mechanical ventilation.

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

CO1: It comprises of clinical postings and practicum and demonstration classes.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %
Unit I	10	Practicum on Pulmonary Function tests includes Spirometry, DLCO, body plethysmography andbronchial provocation Tests	✔			10
Unit II	15	Practicum on technical aspects and interpretation of ChestX-ray, CT chest, lung ultrasound.	✔			15
Unit III	15	Practicum: on modes of ventilation and clinical demonstration	✔			10
Unit IV	15	Practicum on acute respiratory failure andthe need for ventilatory support.	✔			15

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %
Unit V	15	Practicum and case presentation on criteria for trachealintubation and Initiation of ventilatory support	✔			10
Unit VI	15	Practicum and case discussion on weaningpatient from mechanical ventilation	✔			10
UnitVII	20	Practicum on analysis and troubleshooting of ventilatory graphics	✔			15
Unit VIII	15	Practicum and casediscussion on troubleshooting of ventilatory alarms	✔			15

BIOSTATISTICS

Course: VAC **Credits: 02** **No. of hours: 30 Hours**

➢ Course Outcomes:

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

CO1: Understand the concepts of Statistics in the field of Health Professionals.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	3	**Introduction** 1.1 Meaning, definition of statistics. 1.2 Importance of the study of statistics. 1.3 Branches of statistics. 1.4 Statistics and health science including nursing. 1.5 Parameters and estimates. 1.6 Descriptive and inferential statistics. 1.7 Variables and their types. 1.8 Measurement scales		√		15	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHT AGE %	TYPE OF QUESTIONS
Unit II	3	**Tabulation of Data** 2.1 Raw data, the array, frequency distribution 2.2 Basic principles of graphical representation 2.3 Types of diagrams - histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, ogive. 2.4 Normal probability curve.	√			15	SE, SA
Unit III	4	**Measure of Central Tendency** 3.1 Need for measures of central tendency 3.2 Definition and calculation of mean - ungrouped and grouped 3.3 Meaning, interpretation and calculation of median ungrouped and grouped	√			15	LE, SE

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHT AGE %	TYPE OF QUESTIONS
		3.4 Meaning and calculation of mode. 3.5 Comparison of the mean, and mode.					
Unit IV	6	**Measure of Variability** 4.1 Need for measure of dispersion. The range, the average deviation. 4.2 The variance and standard deviation. 4.3 Calculation of variance and standard deviation ungrouped and grouped. 4.4 Properties and uses of variance	√			15	LE, SE
Unit V	6	**Probability and Standard Distribution** 5.1 Meaning of probability of standard distribution. 5.2 The Binominal distribution. 5.3 The normal distribution.	√			15	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHT AGE %	TYPE OF QUESTIONS
		5.4 Divergence from normality - skewness, kurtosis.					
Unit VI	5	**Sampling Techniques** 6.1 Need for sampling - Criteria for good samples. 6.2 Various sampling designs. 6.3 Procedures of sampling and sampling designs errors. 6.4 Sampling variation. 6.5 Tests of significance.	√			15	LE, SE, SA
Unit VII	3	**Health Indicator** 7.1 Importance of health Indicator. 7.2 Indicators of population, morbidity, mortality, health services. 7.3 Calculation of rates and rations of health.		√		10	SE, SA

- **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended Books:

1. K S Negi, Biostatistics, Third Edition, AITBS Publishers, India, 2020.

2. K VisveswaraRao, Biostatistics a Manual of Statistical Methods for Use in Health

3. Nutrition and Anthropology. 2 nd Edition, JAYPEE, 2009.

ENVIRONMENTAL STUDIES

Course: VAC **Credits: 02** **No. of hours: 30 Hours**

➢ Course Outcome:

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

CO1: Student will be able to learn about environment, factors affecting it, environmental ethics and its protection.

CO2: Student will be able to describe a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, ethical, political, health and safety, manufacturability and sustainability.

CO3: Student will be able to critically analyze technical subject matter (Written/ oral) for scientific merit apply learnt environmental knowledge and understanding to solve technical or research problems in new contexts.

COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	2	**Multidisciplinary nature of Environmental Studies** • Multidisciplinary nature of Environmental Studies Environment definition, Components of environment, Scope of environmental studies. Four spheres of earth (Hydrosphere, Atmosphere, Lithosphere and Biosphere)	✓			5	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Concept of sustainability and sustainable development (Brundtland Commission), pillars of sustainability; Sustainable Development Goals (SDGs). • International Agreements: Montreal protocol, Kyoto protocol, Convention on Biological Diversity (CBD)					
Unit II	6	**Ecosystems** • What is an ecosystem? Ecological units. Structure of an ecosystem; biotic and abiotic components, and function of an ecosystem; energy flow in the ecosystem; biogeochemical cycle, biological interactions, food chains, food webs, ecological pyramids and ecological succession. • Types of ecosystems: a. Terrestrial	✓			10	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Forest ecosystem – tropical evergreen, tropical deciduous, temperate evergreen, temperate deciduous and Taiga/Boreal • Grassland ecosystem – Savannas and Temperate grasslands (Steppes, Pampas, Prairies, Veldt and Downs. • Desert ecosystem – hot and dry, semi-arid, coastal and cold. Plant and animal adaptations. b. Aquatic ecosystems – Marine, Freshwater (lentic and lotic) and Estuarine; Pond as an ecosystem. • Ecosystem services					
Unit III	7	**Natural Resources** • Classification of natural resources - Renewable and Non-renewable resources	✓			15	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Forest resources: Uses (timber, medicinal, food, economic importance, prevent soil erosion, control floods, religious and cultural practices) and overexploitation (Deforestation, timber extraction, mining, construction of dams). • Water resources: Uses (domestic, agricultural, industrial, electricity and transport) and over utilization of surface and ground water (drying of wells, lakes and ponds, extraction of groundwater, decrease in water table, deterioration of water quality and land subsidence). Floods, Drought, dams – benefits and problems, conflicts over water (state and international)					

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Land resources: Land as a resource; Land degradation, earthquake, landslides, soil erosion and desertification. • Energy resources: Renewable and non-renewable energy sources, growing energy needs, use of alternate energy sources, case studies (Kochi – first solar powered airport, Tamilnadu – windmills, Gujarat – tidal energy) • Conservation of forest, water, land and energy resources.					
Unit IV	7	**Biodiversity and its conservation** • Introduction; Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India; Global biodiversity hotspots • India as a mega-biodiversity nation; Endangered and endemic species of India					

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; • Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity • Ecosystem and biodiversity services: ecological, economic, social, ethical, aesthetic and informational value. • Human wildlife conflicts in Indian – People and wildlife					
Unit V	8	**Environmental Pollution** Definition • Cause, effects and control measures/management of: - a. Air pollution b. Water pollution c. Soil pollution d. Light pollution e. Noise pollution f. Thermal pollution g. Radiation pollution	✓			15	SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Pollution case studies (London smog, Bhopal gas tragedy, Beijing/Delhi air pollution, Eutrophication, Minamata disease, Exxon Valdez oil spill, Love canal tragedy, Chernobyl disaster) • Climate change, Greenhouse effect, Global warming, Acid rain, Ozone layer depletion. • Solid waste management: control measures of urban and industrial wastes. • Carbon footprint – How to calculate carbon footprint and ways to reduce your carbon footprint. • Human Population growth – impacts on environment					

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		• Environmental movements: Chipko movement, Bishnois of Rajasthan, Silent Valley, Narmada bachao andolan					

❖ **SE**- Short Essay, **SA**- Short Answer

Recommended Books:

1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
4. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.
7. McCully, P. 1996. Rivers no more: the environmental effects of dams (pp. 29-64). Zed Books.
8. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.

11. Rao, M.N. & Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
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18. Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.
19. Wilson, E. O. 2006. The Creation: An appeal to save life on earth. New York: Norton.
20. World Commission on Environment and Development. 1987. Our Common Future. Oxford University Press

SEMESTER-VI

YENEPOYA
(DEEMED TO BE UNIVERSITY)

NEONATAL AND PEDIATRIC RESPIRATORY CARE

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Describe about the fetal lung development and the gas exchange.

CO2: To train the student about neonatal resuscitation guidelines.

CO3: Perform the assessment and monitoring of the neonatal patient.

CO4: Differentiate and describe pathophysiology, salient features and treatment of major neonatal disorders.

CO5: Differentiate the anatomic and physiological differences between adult and child.

CO6: Perform initial assessment of a pediatric patient at bedside.

CO7: Describe the pathophysiology, salient features and treatment of pediatric cardiopulmonary disorders.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	6	**Prenatal and postnatal Development of Respiratory System in fetus** 1.1Fetal lung development	✔			10	LE, SE, SA
		1.2 Fetal gas exchange and circulation	✔				
		1.3 Fetal circulation	✔				
		1.4 Surfactant Production and Metabolism	✔				
		1.5 Composition ofSurfactant	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		1.6 Functions ofSurfactant	✔				
		1.7 Artificial Surfactant-Semi-Synthetic & Synthetic	✔				
		1.8 Transition from intrauterine to extrauterine life post-natal lung development	✔				
Unit 2	4	**General Examination and assessment of a child and neonatal patients** 2.1 Physical examination of child andneonates-Neurological, pulmonaryand nonpulmonary examination	✔			10	LE, SE, SA
		2.2 Airway and thoracic radiographic assessment	✔				
		2.3 Gestational age andsize assessment	✔				
		2.4 Laboratory assessment		✔			
Unit 3	10	**Cardiopulmonarydisease of neonates and pediatrics** 3.1 Airway disorder	✔			15	LE, SE, SA
		3.2 Pediatric lung and related disorders	✔				
		3.3 Surgical disorders in childhood that requires respiratory care		✔			

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		3.4 Heart Failure	✔				
		3.5 Neonatal Pulmonary Disorders · Respiratory distress syndrome ·Meconium aspiration syndrome ·Neonatal pneumonia ·Apnea of prematurity ·Transient Tachypnea ofthe neonate ·Bronchopulmonary dysplasia	✔				
		3.6 Bronchopulmonary dysplasia	✔				
		3.7 Surgical disorders of newborn-Choanal atresia, Cleft Palate Congenital diaphragmatic hernia Tracheoesophageal Fistula	✔				
		3.8 Cyanotic and acyanotic cardiac diseases	✔				
Unit 4	6	**Pediatric Resuscitation** 4.1 Systematic approachto the seriously ill or injured child	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		4.2 Recognition and management of respiratory distress and failure	✔				
		4.3 Recognition and management of shock	✔				
		4.4 Recognition and management of arrythmia's	✔				
		4.5 Recognition, management and post resuscitation of cardiac arrest	✔				
Unit 5	6	**Neonatal Resuscitation** 5.1 Preparation for resuscitation and initialsteps of newborn care	✔				
		5.2 Positive-pressure ventilation	✔			10	LE, SE, SA
		5.3 Chest compression Medication Post Resuscitation care	✔				
		5.4 Thermoregulation	✔				
Unit 6	4	**Therapeutic Approaches In Treatment ForNeonatal And Pediatric Disorders, Oxygen therapy** 6.1 Assessment of needand complications	✔			10	LE, SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		6.2 Targeted saturationin newborn	✔				
		6.3 Delivery devices	✔				
		6.4 Heated humidified high flow nasal cannula (HHHFNC)	✔				
Unit 7	6	**Surfactant Replacement Therapy** 7.1 Need for surfactant therapy and types of surfactants	✔			10	LE, SE, SA
		7.2 Techniques of surfactant delivery- Early/late rescue, INSURE, MIST, LISA	✔				
		7.3 Assessment of the outcome	✔				
Unit 8	4	**Non-Invasive Mechanical Ventilation ofNewborns** 8.1 Non-invasive Positive pressure ventilation (NIPPV) andcontinuous positive airway pressure	✔			5%	SE, SA
		8.2 Interfaces selectionand fit	✔				
		8.3 Indications, contraindications, complications and physiological effect ofNIV	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		8.4 Monitoring the patient and ventilator circuit	✔				
Unit 9	4	**Invasive mechanical ventilation of newborns** 9.1 Indications and contraindications of invasive ventilation	✔			5	SE, SA
		9.2 Types and modes of mechanical ventilation	✔				
		9.3 Improvement of oxygenation and ventilation - adjustmentsof ventilator setting	✔				
		9.4 Weaning andExtubation	✔				
Unit 10	6	**Unconventional modes of Ventilation** 10.1 High Frequency ventilation	✔			10	LE, SE, SA
		10.2 Nitric oxide therapy	✔				
		10.3 Extracorporeal membrane oxygenation		✔			
Unit 11	4	**Pediatric Home Care** 9.1 Oxygen therapy athome	✔			5	SE, SA
		9.2 Tracheostomy management home mechanical ventilation	✔				
		9.3 Home mechanical ventilation		✔			

❖ Long Essay - LE, Short Essay - SE, Short Answer - SA

Recommended books

- Mosby's Respiratory Care Equipment, J.M. Cairo, 10th Edition
- Mechanical Ventilation Physiological and Clinical Application by Susan Pilbeam andJim Cairo, 7th edition
- John P. Cloherty, Manual of Neonatal Care, Lippincott Williams and
- Wilkins. 8th edition
- Goldsmith Karotkin, Assisted ventilation of the neonate, Elsevier Saunders
- Meharban Singh, Care of the newborn, Eighth edition

CARDIOPULMONARY REHABILITATION AND HOME CARE

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Describe the historical perspective of pulmonary rehabilitation.

CO2: Explain the basic concepts of pulmonary rehabilitation.

CO3: Select and assess the chronic respiratory disease patients for pulmonary rehabilitationand family education.

CO4: Discuss on nutritional assessment and support.

CO5: Explain the behavioral medicine psychological, cognitive and social factors in pulmonary rehabilitation.

CO6: Enumerate the preventive aspects for the patient with chronic lung disease.

CO7: List the exercises in the rehabilitation of patients with respiratory disease.

CO8: Discuss on home mechanical ventilation.

CO9: Have the background knowledge and skills required for the rehabilitation of non – COPD lung disease and rehabilitation for the pediatric patient with pulmonary disease.

CO10: Have the background knowledge and skills required for physical medicine interventions and rehabilitation of the patient with neuromuscular weakness and surgical therapy for COPD patients.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	6	**Overview Of Pulmonary Rehabilitation** 1.1 Pulmonary rehabilitation: History, definition and rational for pulmonaryrehabilitation	✔			5	SE, SA
		1.2 Evidence based guidelines on pulmonary rehabilitation and integrated care of the respiratory patient	✔				
		1.3 Positioning Pulmonary Rehabilitationwithin the GOLD 2017 Guidelines		✔			
		1.4 Current status of Pulmonary Rehabilitation	✔				
Unit 2	6	**Selecting AndAssessing the Pulmonary RehabilitationCandidate** 2.1 Patient Selection	✔			10	LE, SE, SA
		2.2 Condition appropriate for pulmonary rehabilitation	✔				
		2.3 Patient assessment	✔				
		2.4 Goal development and rehabilitation potential	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 3	6	**Exercise Assessment and Training** 3.1 Mechanism of exercise training and rationale for exercise intolerance in chronicrespiratory disease	✔				
		3.2 Exercise assessment Field tests Graded exercise test and cardiopulmonary exercisetest Functional performanceassessment	✔				LE, SE, SA
		3.3 Exercise training Volume pattern and progression of exercise training Resistance exercisetraining other tests of muscletraining Flexibility training Exercise prescription	✔			15	
		3.4 Patient safety Precaution in pulmonary hypertension Exercise inducedhypoxemia Oxygen titration Emergency procedure	✔				
		3.5 Home exercise consideration	✔				
		3.6 Documentation of the evaluation and treatment.	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 4	4	**CollaborativeSelf-Managementand Patient Education** 4.1 Developing an Individualized self-management Program	✔			10%	LE, SE, SA
		4.2 Components of self-management program	✔				
		4.3 Implementing self-management Training	✔				
Unit 5	4	**Psychosocial Assessment and Intervention** 5.1 Components of psychosocial assessment	✔			10	LE, SE, SA
		5.2 Assessment of psychosocial functioning	✔				
		5.3 Interventions to improve psychosocial functioning	✔				
		5.4 Psychosocial provider	✔				
Unit 6	4	**Nutritional Assessment and Intervention** 6.1 Compromised nutritional status in pulmonary disease	✔			5	SE, SA
		6.2 Diet intake and COPD	✔				
		6.3 Assessment of nutritional status	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		6.4 Nutrition support	✔				
Unit 7	6	**PatientCentered Evidence Based Outcomes** 7.1 Timing and analyzing outcomes	✔			10	LE, SE, SA
		7.2 Patient centered outcome measures	✔				
		7.3 Common outcome measurement tools	✔				
		7.4 Other outcome measures	✔				
Unit 8	8	**Disease Specific Approaches in Pulmonary Rehabilitation** 8.1 Obstructive lung disease	✔			15	LE, SE, SA
		8.2 Restrictive lung disease	✔				
		8.3 Pulmonary Hypertension	✔				
		8.4 Lung cancer	✔				
		8.5 Pulmonary Rehabilitation and the surgical patient	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		8.6 Pulmonary rehabilitation for the pediatric patient with pulmonary disease	✔				
Unit 9	4	**Program Management** 9.1 Interdisciplinary team and program content	✔			5	SE, SA
		9.2 Administrative aspects of program management		✔			
		9.3 Post rehabilitation maintenance	✔				
		9.4 Strategies for program success	✔				
Unit 10	4	**Performance Measures, Outcomes, Valid and Reliable Tools** 10.1 Measuring the quality of patient care	✔			5	SE, SA
		10.2 AACVPR outpatient pulmonary rehabilitation registry	✔				
Unit 11	8	**HomeCare Patient Assessment** 11.1 The Evolution and Importance of Respiratory Home Care	✔			10	LE,SE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		11.2 Assessment of the Home Care Patient Role and Qualifications of the Home Care Respiratory Therapist Role Initial Visit and Assessment Home care assessment tools, equipment's and resources	✔				
		11.3 Patient education and training	✔				
		11.4 Discharging the patient ·Plan of care ·Follow-up care	✔				

❖ **LE**- Long Essay**, SE**- Short Essay**, SA**- Short Answer

Recommended books

- AACVPR Guidelines for Pulmonary Rehabilitation Programs. 5th edition
- Kaczmarek R, eds. Egan'sFundamentalsofRespiratoryCare.12th edition.
- John E. Hodgkin: Pulmonary Rehabilitation: Guidelines to Success. 4th edition.
- White, G. (2012). Basic Clinical Lab Competencies for Respiratory Care: An IntegratedApproach 5th edition

SLEEP MEDICINE AND POLYSOMNOGRAPHY

Course: Core **Credits: 04** **No. of hours: 60 Hours**

➢ Course Outcome:

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

CO1: Understand the evolution and scope of sleep medicine.

CO2: Discuss the importance of sleep and its normal physiology.

CO3: Understand the different stages of sleep and it changes to sleep architecture.

CO4: Learn about various sleep disorders and management strategies.

CO5: Explain the indications of polysomnography and patient preparation

CO6: Understand and learn the aspects of conducting sleep study, scoring and reporting.

CO7: Discuss the diagnostic criteria and interventional practices for each sleep disorders.

CO8: Understand the main electrodes and other biopotentials used in sleep studies.

CO9: Understand the role of pharmacology in sleep medicine

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 1	4	**Introduction to Sleep Medicine and Polysomnography** 1.1 The scope of modern sleep medicine		✔		5	SE, SA
		1.2 The evolution of polysomnographic technology		✔			

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 2	4	**Physiologyof Normal Sleep** 2.1 Human Sleep-Neurophysiology, patterns and phenomenon &Human Circadian Rhythm	✔			5	SE, SA
		2.2 Sleep stages and Changesto Sleep	✔				
		2.3Architecture Sleep and Aging		✔			
		2.4 Effects of drugs on Sleep,Pregnancy and Sleep	✔				
Unit 3	4	**SleepDisorders** 3.1Classification of Sleep Disorders, Obstructive SleepApnea, Sleep Related Breathing Disorders & Hypersomnia of Central Origin	✔			10	LE, SE, SA
		3.2 Periodic Leg MovementDisorders, Restless Legs Syndrome	✔				
		3.3 Narcolepsy, Parasomnias& Insomnia	✔				
		3.4 Circadian Rhythm Sleep Disorders, Isolated Symptoms&Other Sleep Disorders	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 4	4	**SystemicSleep Disorders** 4.1Cardiopulmonary Disorders and Sleep	✔			5	SE, SA
		4.2 Neurologic Disorders andSleep	✔				
Unit 5	4	**DiagnosticEquipment** 5.1 Basic Electronics	✔			5	SE, SA
		5.2 Signal Pathways, Monitoring Devices& Differential Amplifier	✔				
		5.3 Digital Polysomnography	✔				
Unit 6	6	**PatientConnection Procedures** 6.1 International 10-20 System	✔			10	LE, SE, SA
		6.2 Electrode Sites & Electrode Application	✔				
		6.3 Impedance Checks & Tricks and Tips	✔				
Unit 7	4	**PatientPreparation** 7.1Patient Interviewing	✔			5	SE, SA
		7.2 Patient Assessment	✔				
Unit 8	4	**Overnight Sleep Study** 8.1 Order of Operations, Reviewing the Patient Chart,Preparing the Patient Tray &Preparing the Patient Room	✔			10	

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		8.2 Connecting the Diagnostic Equipment, Selecting a Montage, Amplifier Calibrations & Patient Questionnaires	✔				
		8.3 Patient Education, Physiologic Calibrations, Technician Notes and Documentation, Ending the Study& Patient Discharge	✔				
Unit 9	4	**Performing a CPAP Titration** 9.1 Positive Airway PressureTherapy- Parts and machine interface & Masks-Type andFitting	✔			10	LE, SE, SA
		9.2 CPAP and CPAP titrations & Bi-Level PAP and titration	✔				
		9.3 Split-Night Polysomnography & Supplemental O2	✔				
		9.4 Auto-titrating Devices forPositive Airway Pressure	✔				
Unit 10	6	**Interventions and Therapeutics** 10.1 MSLT, MWT &REM	✔			5	SE, SA
		10.2 Nocturnal Seizure Study		✔			

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
		10.3 Ambulatory Sleep Study/ Home Sleep Apnea Testing (HSAT) & Other Diagnostic Procedures	✔				
Unit 11	4	**PolysomnogramChannels** 11.1 EEG Channels, EOG Channels, EMG Channels &EKG Channels	✔			10	LE, SE, SA
		11.2 Respiratory Channels &SpO2	✔				
		11.3 Body Position	✔				
Unit 12	4	**Scoring ofSleep and Events** 12.1 Apnea- Hypopnea Index	✔			10	LE, SE, SA
		12.2 Sleep staging Rules	✔				
		12.3 Arousal Rules, CardiacRules, Movement rules & Respiratory rules	✔				
		12.4 Sleep Study Times, Formulas, and Calculations	✔				
Unit 13	4	**Pharmacologyin Sleep Medicine** 13.1 Hypnotics, Stimulants, Sedatives, Antipsychotics and antidepressants	✔			5	SE, SA
		13.2 Effect of medication onMSLT and MWT	✔				

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit 14	4	**Other Interventions and Therapeutics** 14.1 Dental Sleep Medicine		✔		5	SE, SA
		14.2 Surgical and Pharmacologic Treatment ofSleep Disorders	✔				
		14.3 Sleep Hygiene, Patient and Family Education	✔				

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended books

- William H. Spriggs - Essentials of Polysomnography: A Training Guide and Reference forSleep Technicians- 2nd Edition
- Lee-ChiongTeofilo, Cynthia Mattice, Rita Brooks - Fundamentals of Sleep Technology, 3rdEdition
- Kryger, Roth and Dement- Principles and practice of sleep medicine -5th edition
- Sudhansu Chokroverty - Sleep Disorders Medicine: Basic Science, Technical Considerationsand Clinical Aspects-4th Edition
- The AASM manual for scoring of sleep and associated events rules
- Terminology & Technical Specifications – version 2.4

CLINICAL TRAINING - IV

Course: SEC **Credits: 04** **No. of hours: 120 Hours**

➢ Course Outcome:

This course will provide a practical and demonstrative approach about modalities of pulmonary rehabilitation, home mechanical ventilation, non-invasive ventilation.

At the end of the course, the student should be able to know:

CO1: Practical demonstration for the topics learnt during theory classes

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %
Unit I	15	Practicum on Neonatal and PediatricResuscitation	✔			10
Unit II	20	Practicum and clinical case presentation on therapeutic approaches in treatment for neonatal and pediatric disorders	✔			15
Unit III	15	Practicum and demonstration about Unconventional modes of Ventilation,including HFOV	✔			10
Unit IV	15	Practicum and demonstration about pulmonary rehabilitation devices and modalities	✔			15

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %
Unit V	10	Practicum and demonstration aboutdisease specific management in neonates and pediatrics	✔			10
Unit VI	15	Performs 6-minute timed distancewalk test	✔			10
Unit VII	10	Instructs patient and family in the home exercise program (HEP) andhas them keep an exercise log	✔			10
Unit VIII	10	Select appropriate device for homecare	✔			10
Unit IX	10	Practicum and demonstration aboutsleep study and CPAP titration.	✔			10

MEDICAL ETHICS

Course: VAC **Credits: 02** **No. of hours: 30 Hours**

➢ Course Outcomes:

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

CO1: Increasing the awareness and knowledge of students of the value dimensions of interactions with the patients, colleagues, relations and public.

CO2: Fostering the development of skills of analysis, decision making and judgment.

CO3: Making the students aware of the need to respect the rights of the patient.

➢ COURSE CONTENT:

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit I	3	**Introduction to ethics** What is ethics, what are values and norms, freedom and personal responsibility?	✔			15	SA, SE
Unit II	4	**Definition of medical ethics** Major principles of medic ethics.	✔			20	LE, SA

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit III	4	**Perspective of medical ethics** The Hippocratic oath, The Declaration of Helsinki, The WHO Declaration of Geneva, International code of Medical Ethics (1993), Medical Council of India Code of Ethics (2002).	✔			15	LE, SA, SE
Unit IV	4	**Ethics of the individual** Truth and confidentiality, the concept of disease, health and healing, the Rightto health.	✔			15	SE
Unit V	3	**The ethics of human life** Prenatal sex determination.	✔			15	SA, SE

UNIT	NO. OF HOURS	CONTENT	MUST KNOW	GOOD TO KNOW	DESIRABLE TO KNOW	WEIGHTAGE %	TYPE OF QUESTIONS
Unit VI	4	**The family and society in medical ethics** Euthanasia, cancer and terminal care.		✔		10	LE, SA
Unit VII	4	**Death and dying** Use of life-support systems, the right to die with dignity, suicide– the Ethical outlook.		✔		05	LE, SA, SE
Unit VIII	4hrs	**Professional Ethics** Contract and confidentiality, malpractice and negligence.		✔		05	SA, SE

- **LE-** Long Essay**, SE-** Short Essay**, SA-** Short Answer

Recommended Books:

1. Tsai DF. The WMA medical ethics manual. Journal of Medical Ethics. 2006 Mar 1;32(3):163
2. Loewy EE, Loewy RS. Textbook of healthcare ethics. Springer Science & Business Media; 2004 Jun 29.

INTERNSHIP (SEMESTER VII &VIII)

ELIGIBILTY:

A candidate should have passed in all the courses (Core, AECC and Electives) accounting to 120 number of creditsbefore entering in to internship.

DURATION:

A candidate has to mandatorily complete 1 year (2 semesters) of internship. The total credit per semester is 18 andfor two semesters it is 36.

OBJECTIVES:

1. Reproduce related knowledge to guide related respiratory diagnostics, therapeutics and modification ofrespiratory care plans.
2. Recognize bioethical concepts and workflow policy and procedure of health care system.
3. Perform respiratory care diagnostics procedures.
4. Interpret patient data to plan and justify respiratory care therapeutics.
5. Assess and analyze patients' outcomes with other health care providers to modify and reconstruct respiratory careplan. Demonstrate professional behavior including, but not limited to, integrity, empathy, self-motivation
6. Personal hygiene, self-confidence, communications, time management, teamwork, diplomacy, respect, patientadvocacy and careful delivery of service.

CLINICAL ROTATION AREAS AND DURATION (Mandatory):

Areas/Unit	Minimum duration
Medical ICU (Rotational postings)	3 months
Surgical Intensive Care Unit (Rotational postings)	3 months
Pediatric Intensive Care Unit (Rotational postings)	2 months
PFT/Bronchoscopy (Rotational postings)	2 months
Neonatal Intensive Care Unit	1 month
Stepdown ICU	1 month

LEARNING OUTCOMES:

Sl.No.	Learning Outcomes	Knowledge/Comprehension	Application/Synthesis/Evaluation
1.	Infection control practices	-Infection prevention Strategies -Standard Precautions -Isolation Protocols -Bundle of Care -Biomedical Waste Management	- Perform appropriate hand washing techniques - Follow universal precautions for air borne and blood borne infections - Follow the biomedical waste management
2	Initial assessment and patient monitoring	-Assessment of Respiratory System • Inspection • Percussion • Palpation	- Perform proper medical history taking - Perform physical examination for all the patients - Identify abnormalities in the vital signs
		• Auscultation -Examination of other body systems -Hemodynamic Monitoring -Monitoring Trends in Vital Signs	- Pulse oximetry and EtCO2 monitoring - Monitoring of clinical signs symptoms and intervene Accordingly.
3.	Diagnostic procedure	-Bronchoscopy -Bronchoalveolar Lavage -Pulmonary Function Tests -Arterial Blood Gas Sampling and Interpretation -Chest Xray -CT Lung and Thorax	- Perform pulmonary function test and interpret the test accordingly - Perform arterial blood gas analysis and interpret the report accordingly - Interpret the chest radiography report
4.	Respiratory care procedures	-Lung Expansion Therapy -Aerosol Therapy -Bronchial Hygiene Therapy -Humidification Therapy	- Perform bronchial hygiene therapy - Deliver appropriate aerosolizedmedications using aerosol delivery devices as per the patient requirement

Sl.No.	Learning Outcomes	Knowledge/Comprehension	Application/Synthesis/Evaluation
5	Airway management skills	Intubation Extubation Pharyngeal Airway Devices Techniques to maintain patent airway Cuff Pressure Management Percutaneous Tracheostomy Difficult Airway Management	- Perform the technique used to maintain a patent airway. - Identify difficult airways and maintain the airway patency - Prepare the equipment's required for intubation and perform airway intubation - Determine whether the airway is inserted properly in trachea with appropriate evaluation technique - Perform appropriate airway cuff inflation with a cuff manometer - Timely examination of cuff pressure for all the intubated patients and document - Perform proper securing of the artificial airway - Identify any issues associated with artificial airway and troubleshoot it accordingly
6.	Oxygen therapy	Indications of Goals of Oxygen Therapy Low Flow and High Flow Devices Hazards of Oxygen Therapy	-Perform verification of order -Explain the purpose of initiating oxygen therapy to patient -Organize and assemble the necessary equipment's for initiating oxygen therapy - Examine the proper functioning of the set up -Apply the device to patient face assuring proper fit and comfort -Perform proper documentation of the patient's condition during the procedure
7.	Non- invasive ventilation	-Goals, Indications and contraindications of NIV -Steps of initiation of NIV -Selection Criteria - Non-invasive Interfaces -Weaning	-Initiation of non-invasive mechanical ventilation -Determine the criteria to switch from non-invasive to invasive ventilation -Titration of parameters accordingly as per the patient underlying condition -Troubleshoot the problems associated with the ventilation

Sl.No.	Learning Outcomes	Knowledge/ Comprehension	Application/Synthesis/ Evaluation
8.	Initiation of mechanical ventilation and disease specific ventilation (Adult/pediatric/ neonatal)	-Indications -Goals of mechanical ventilation -Disease specific approach in mechanical ventilation - Ventilator waveforms -Identify the abnormal ventilator waveforms and troubleshoot it accordingly -Recruitment maneuvers -Normal ventilator parameters -Troubleshooting ventilator Alarms	-Perform initial set up, check and set up ventilator settings according to the various respiratory disorders. -Set appropriate ventilator alarm -Perform monitoring of ventilator parameters and troubleshoot of any problem -Determine the management strategy as per the clinical condition in terms of general, definitive and supportive measures -Decide appropriate ventilator strategy and troubleshoot the problems associated with the ventilation
9.	Bedside weaning assessment and extubation	- Spontaneous breathing trials - Weaning strategies - Extubation readiness assessment	-Perform spontaneous breathing trials as per the protocol. -Organize and assemble the equipment's -Measure the parameters that determine readiness to extubation -Determine the hemodynamic stability of the patient before extubation -Determine if the patient meets the requirement for extubation and perform extubation -Post extubation assessment and management -Perform proper documentation and monitoring of the patient
10.	Evidence based practices	- Updated about the recent clinical trials related to respiratory care management of the patient	-Apply the evidence-based practices in the treatment plan
11	Ethical principles and guidelines	-Knowledge on ethical principles and guidelines pertaining to the patient care	Follow the ethical guidelines and be aware of legal issues affecting respiratory care

INTERNSHIP TRAINING RULES AND CODE OF CONDUCT

1. The duration of the internship shall be a minimum of one year or 2 semesters (8 hours of practice a day, totaling to 36 credits).

2. The Interns shall be entitled for 12 days of casual leave on any account during the entire period of Internship and no other leave shall be permissible.

3. The candidate is expected to work for minimum 8 hours per day and the duty timings can be flexible depending on the healthcare setting requirement.

4. If the period of leave exceeds the sanctioned limit, Internship is liable to be extended at the discretion of the authority. In case of Emergency any additional leave asked for shall be discretion of the authority and will be doubled.

5. The attendance of all the interns shall be marked/monitored by the respective Clinical coordinator and concerned HOD, by maintaining the intern's attendance register. All the interns are directed to mark their attendance, by putting their full initials (specimen signature to be given to the Clinical coordinator).

6. Interns shall observe duties as per the roster devised by the department, and no change in duty shall bepermissible without the permission of clinical coordinators Interns shall be courteous, polite, respectful and sympathetic towards the patients, their accompanying attenders, hospital staff and their colleagues.

7. Intern shall maintain decorum and commitment and discipline of the profession and show keen interest in patient care.

8. The interns will be entrusted with clinical responsibilities under supervision of the senior therapist and are expected to discharge the duties assigned to them sincerely & effectively.

9. Aprons/scrubs & ID is mandatory while reporting to the Hospital and always carry the required articles needed for examination of the patients. A fine of Rs.500/- will be charged from the interns not using white coat/scrubs and identification card during their duty in the Hospital.

10. Scrubs should be worn inside the campus only. If found outside, a fine of Rs 500/- will be charged.

11. The performance shall be assessed based on the assessment sheet provided in the Log Book.

12. Maintains safe and clean working environment by complying with procedures, rules, and regulations.

13. Provides continuous of care by developing and implementing patient-management plans.

14. Each semester of Internship shall be minimum of 18 credits. The credits are calculated based on 1 credit = 3 to 5 hours of practical training. There shall be an exit exam at the end of each semester.

INTERNSHIP COMPLETION

The student should score a minimum 50% marks to be eligible for the Internship completion certificate.

Acknowledgement:

The Curriculum Development Committee of Indian Association of Respiratory Care (IARC).

ANNEXURES

List of Annexures:

- ANNEXURE – I: Question Paper Layout for Theory University Examination (Core)
- ANNEXURE – II: Question Paper Layout for Theory University Examination (AEC & VAC)
- ANNEXURE – III: Internship Competency Checklist
- ANNEXURE – IV: Internship Assessment and Evaluation Format
- ANNEXURE – V: OSCE & OSPE Evaluation Checklist
- ANNEXURE – VI: Logbook Format

ANNEXURE – I: Question Paper Layout for Theory IA & SEE Examination (Core)

Model Question Paper

I Semester B.Sc. Technology

Time: 2 Hours Max. Marks: 50 Marks

SUBJECT NAME:
Q.P Code:
Your answer shall be specific to question asked.
Draw neat and labeled diagrams wherever necessary.

LONG ESSAY (Answer any One) **(1x10=10Marks)**

1.

2.

SHORT ESSAY (Answer any Five) **(5x4=20Marks)**

3.

4.

5.

6.

7.

8.

9.

SHORT ANSWERS (Answer any Ten) **(10x2=20Marks)**

10.

11.

12.

13.

14.

15

16.

17.

18.

19.

20.

21.

ANNEXURE – II: Question Paper Layout for Theory IA & SEE Examination (AEC/VAC)

Model Question Paper

I Semester B.Sc. Technology

Time: 1 Hours Max. Marks: 25 Marks

SUBJECT NAME:
Q.P Code:

Your answer shall be specific to question asked.
Draw neat and labeled diagrams wherever necessary.

LONG ESSAY (Answer any Three) **(3x5=15Marks)**

1.
2.
3.
4.
5.

SHORT ANSWERS (Answer any Five) **(5x2=10Marks)**

6.
7.
8.
9.
10.
11.
12.

YENEPOYA
(DEEMED TO BE UNIVERSITY)

ANNEXURE – III: Internship Competency Checklist

COMPETENCY CHECKLIST:

Clinical posting area: Clinical Coordinator:

Duration (From) :---------- Signature:

(To):.....

Clinical Skills	**Complete**	**Incomplete**	**NA**
Participation / Observation record			
Obtaining Vitals & ECG Interpretation			
Oxygen Administration			
Aerosol Therapy (MDI, DPI, SVN)			
Intubation / Assisting Intubation & Airway Cuff PressureMeasurement			
Artificial airway insertion			
Incentive Spirometry			
Chest Physical Therapy			
Bronchial Hygiene Therapy			
Chest X-ray Interpretation			
ABG Sampling			
ABG Interpretation			
PFT Interpretation			
Adult Ventilator Initiation & Monitoring			
Ventilator circuit change			
Troubleshooting of ventilatory alarms			
High Flow Nasal Oxygen Initiation			
NIV Initiation			
Obtaining ET Aspirate			
Bedside Weaning Assessment			
Extubation			
Neonatal / Pediatric Oxygen Therapy & Ventilatory setup			
Neonatal / Pediatric ventilator troubleshooting			

ANNEXURE – IV: Internship Assessment and Evaluation Format

CLINICAL EVALUATION:

Quality and Quantity of Work:

Quality and Quantity of work	Poor (1)	Good (2)	Very Good (3)	Excellent (4)	Remarks
1.To what extent has the quality of intern's work matched the responsibilities given?					
2.How thorough and complete has the intern's work been?					
3. How successful has the intern been in meeting the requirements with respect to the amount of work within the time allocated?					
4.Define in quantity (list) work done: 1. 2. 3. 4.					

Knowledge of work and working abilities evaluation:

Knowledge of work and working abilities	Poor (1)	Good (2)	Very Good (3)	Excellent (4)	Remarks
1. To what extent does the intern demonstrate capability of using scientific facts and skills as a basis for his performance?					
2. To what extent does the intern demonstrate a desire to learn more than just routine aspects of the prescribed work?					
3. To what extent does the intern adjust to new work methods and conditions?					
4. How effective has the intern been in planning and organizing his work?					
5. How effectively does the Intern communicate in speech and writing					
6. To what extent does the intern accept the maximum responsibilities for his work and volunteer for new assignments?					
7. How effective has the intern been in establishing a working relationship?					
8. To what extent is the intern receptive to new ideas and information?					

General Performance:

General Performance	Poor (1)	Good (2)	Very Good (3)	Excellent (4)	Remarks
1.To what extent has the intern been punctualand complied with the working hours of the institution?					
2.How effective has the intern been in followingdepartmental policies and procedures?					
3.How effective were the intern's attitudestowards other members of the health care team?					

Clinical Evaluation

The total points acquired will be calculated for the 15 components and the points acquired out of 60 marks will benormalized to 50 marks for grading.

Case Presentation

Slide preparation and explanation skill	5 marks
Respiratory care Management	10 marks
Reasoning skills/new updates	10 marks
Total Marks	25 marks

Log Book

- Documentation of one clinical case per day and to be verified by the respective clinical In-charge.

- Submission of log book to be done fortnightly and verified by the coordinator.

RUBRICS FOR CLINICAL EVALUATION:

Skills	Marks
Clinical Evaluation	50 marks
Case Presentation	25 marks
Log Book	25 marks
Total Marks	100 marks

ANNEXURE – V: Objective Structured Clinical Examination (OSCE) Checklist

Competency Title: ACLS Management of Adult Cardiac Arrest

Station Type: Observed Structured Clinical Examination (OSCE)

Domains: Psychomotor and Affective domains of learning

Duration: 10 minutes

- Reading time: 1 minute
- Performance: 7 minutes
- Examiner interaction: 2 minutes

Setting: Emergency room / ICU simulation bay

Station Objectives: To assess the student's ability to:

- Recognize cardiac arrest
- Identify arrest rhythm
- Perform high-quality CPR
- Assist in airway and ventilation management
- Apply ACLS algorithms effectively
- Communicate within the resuscitation team

Candidate Instructions

You are the Respiratory Therapist in the Emergency Department. A 60-year-old male patient is unresponsive, pulseless, and apneic. The cardiac monitor shows ventricular fibrillation.

You are required to:

- Initiate resuscitation as per ACLS guidelines
- Manage airway and ventilation
- Assist the team leader appropriately
- Verbalize actions clearly

Observer Checklist (20 Marks)

Domain	Performance Criteria	Max Marks	Marks Obtained
Scene Safety & Initial Response	2 – Checks scene safety, assesses responsiveness, calls for help/code clearly 1 – Performs either scene safety or calls for help, not both 0 – Does not assess safety or call for help	2	
CPR Quality	4 – Immediate CPR with correct rate (100–120/min), depth (5–6 cm), full recoil, minimal interruptions 3 – CPR with minor errors in rate/depth or brief interruptions 2 – CPR with multiple errors or prolonged interruptions 1 – CPR attempted but largely incorrect 0 – CPR not initiated	4	
Rhythm Recognition	3 – Correctly identifies VF and states it is a shockable rhythm 2 – Identifies rhythm as shockable but misnames VF 1 – Incorrect rhythm identified0 – No attempt	3	
Defibrillation	4 – Correct energy selection, clear safety check, appropriate shock delivery 3 – Correct energy with minor safety lapse 2 – Incorrect energy but correct safety steps 1 – Major procedural or safety errors0 – No defibrillation attempted	4	
Airway & Ventilation	3 – Effective BVM with oxygen, correct timing without interrupting CPR 2 – BVM used but poor seal or incorrect rate 1 – Ineffective ventilation or excessive CPR	3	

	interruption 0 – Airway/ventilation not addressed		
Drug Knowledge	2 – Correct drug and dose stated (e.g., Adrenaline 1 mg IV or Amiodarone 300 mg IV) 1 – Correct drug but incorrect dose/timing 0 – Incorrect drug or no response	2	
Team Communication	2 – Clear commands with closed-loop communication 1 – Communication present but unclear or incomplete 0 – No or inappropriate communication	2	
TOTAL		20	____ / 20

ANNEXURE – VI: Objective Structured Practical Examination (OSPE) Checklist

Competency Title: Endotracheal Intubation

Station Type: Objective Structured Practical Examination (OSPE)

Duration: 5 minutes

Setting: Skills lab / Simulation lab

Objective: To assess the student's knowledge of intubation steps, equipment handling, and confirmation of tube placement.

Student Instructions

At this station, you are required to:

1. Identify the airway equipment provided
2. Arrange the steps of adult endotracheal intubation in correct sequence
3. Demonstrate laryngoscope handling and endotracheal tube insertion technique on the manikin (no ventilation required)

Equipment Provided

- Adult airway manikin
- Laryngoscope with Macintosh blade
- Endotracheal tubes (various sizes)
- Stylet and syringe
- Bag-valve-mask
- Suction catheter

Observer Checklist (10 Marks)

Component	Performance Criteria	Max Marks	Marks Obtained
Equipment Identification	**2** – Correctly identifies ≥4 essential airway items **1** – Identifies 2–3 essential items correctly **0** – Identifies ≤1 item or incorrect identification	2	
Patient Positioning	**2** – Demonstrates correct sniffing position with head elevation and neck flexion **1** – Attempts positioning but incomplete or incorrect alignment **0** – Does not position patient or positions incorrectly	2	
Laryngoscope Handling	**2** – Holds laryngoscope correctly, inserts blade from right side, displaces tongue appropriately **1** – Correct grip but incorrect blade insertion or tongue handling **0** – Incorrect grip and insertion technique	2	
ETT Selection & Insertion	**2** – Selects appropriate tube size and inserts ETT in correct direction under vision **1** – Correct tube size but improper insertion technique or orientation **0** – Incorrect tube size and/or incorrect insertion	2	
Depth & Cuff Inflation	**1** – States or demonstrates correct insertion depth and inflates cuff appropriately **0** – Incorrect depth stated/demonstrated or cuff inflation omitted	1	
Tube Confirmation	**1** – States any two correct methods of confirmation (e.g., chest rise, auscultation, $ETCO_2$) **0** – States only one or incorrect methods	1	
TOTAL		**10**	**____ / 10**

ANNEXURE – VII: Logbook Format

YENEPOYA SCHOOL OF ALLIED HEALTH SCIENCES

Constituent unit of Yenepoya **(Deemed to be University)**
University Road, Deralakatte, Mangalore – 575018

LOG BOOK - CLINICAL TRAINING

Bachelor of Science in Respiratory Therapy

Name :

Reg. No. :

Academic Year :

YENEPOYA
(DEEMED TO BE UNIVERSITY)

YENEPOYA SCHOOL OF ALLIED HEALTH SCIENCES

Constituent Unit of
Yenepoya (Deemed to be University)

Academic Details

Name : _____

Register ID : _____

Semester : _____

Batch : _____

Academic Year : _____

Academic Year : _____

Name of the Centre : _____

SIGNATURE OF STUDENT **PROGRAMME COORDINATOR**

Date/ Time	Patient demographic details	Case	Reports of diagnostic tests	Treatment (Specific management and ventilator management)	Treatment plan	Clinical Incharge signature