K.R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

SCHOOL OF MEDICAL AND ALLIED SCIENCES

B.Sc. (Hons.) Respiratory Therapy

Programme Code: 89

UNDERGRADUATE PROGRAMME

DETAILED SYLLABUS

(With effect from 2025-26 session)

Session: 2025-2029

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1. Preface

The K.R. Mangalam Group has made a name for itself in the field of education. Over a period, the various educational entities of the group have converged into a fully functional corporate academy. Resources at KRMU have been continuously upgraded to optimize opportunities for the students. Our students are groomed in a truly inter-disciplinary environment wherein they develop integrative skills through interaction with students from engineering, management, journalism and media study streams.

The K.R. Mangalam story goes back to the chain of schools that offered an alternative option of world-class education, pitching itself against the established elite schools, which had enjoyed a position of monopoly till then. Having blazed a new trail in school education, the focus of the group was aimed at higher education. With the mushrooming of institutions of Higher Education in the National Capital Region, the university considered it is very important that students take informed decisions and pursue career objectives in an institution, where the concept of education has evolved as a natural process.

K.R. Mangalam University was founded in the year 2013 by Mangalam Edu Gate, a company incorporated under Section 25 of the Companies Act, 1956.

Uniqueness of KRMU

I. Enduring legacy of providing education to high achievers who demonstrate leadership in diverse fields.

II. Protective and nurturing environment for teaching, research, creativity, scholarship, social and economic justice.

Education Objectives

1. To impart undergraduate, post-graduate and Doctoral education in identified areas of higher education.

2. To undertake research programmes with an industrial interface.

3. To integrate its growth with the global needs and expectations of the major stake holders through teaching, research, exchange & collaborative programmes with foreign, Indian Universities/Institutions and MNCs.

4. To act as a nodal center for transfer of technology to the industry.

5. To provide job oriented professional education to the student community with particular focus on Haryana.

NEP-2020: K.R. Mangalam University has adopted the National Education Policy NEP-2020 to establish

a holistic and multidisciplinary undergraduate education environment, aiming to equip our students for the demands of the 21st century. In compliance with the guidelines of NEP-2020 regarding curriculum structure and duration of the undergraduate programme, we now offer a Four-Year Undergraduate Programme in Respiratory Therapy.

On completion of 8th sem. with the required number of credits, a student will be awarded a 4-year Bachelor's Degree (Hons.).

S. No.	Broad Categories of Courses	Minimum Credit Requirement for Four Year UG Program
1	Major (Core)	69
2	Minor	23
3	Multidisciplinary	09
4	Ability Enhancement Course (AEC)	09
5	Skill Enhancement Course (SEC)	10
6	Value-Added Course (VAC)	08
7	Summer Internship	04
8	Research Project/Dissertation	40
9	Total	172

Categories of Courses

Major: The major would provide the opportunity for a student to pursue in-depth study of a particular subject or discipline.

Minor: Students will have the option to choose courses from disciplinary/interdisciplinary minors and skill-based courses. Students who take a sufficient number of courses in a discipline or an interdisciplinary area of study other than the chosen major will qualify for a minor in that discipline or in the chosen interdisciplinary area of study.

Ability Enhancement Course (AEC): Students are required to achieve competency in a Modern Indian Language (MIL) and in the English language with special emphasis on language and communication 4 skills. The courses aim at enabling the students to acquire and demonstrate the core linguistic skills,

including critical reading and expository and academic writing skills, that help students articulate their arguments and present their thinking clearly and coherently and recognize the importance of language as a mediator of knowledge and identity.

Skills Enhancement Courses (SEC): These courses are aimed at imparting practical skills, hands-on training, soft skills, etc., to enhance the employability of students.

2. University Vision and Mission

2.1 Vision

K.R. Mangalam University aspires to become an internationally recognized institution of higher learning through excellence in inter-disciplinary education, research, and innovation, preparing socially responsible life-long learners contributing to nation building.

2.2 Mission

- Foster employability and entrepreneurship through futuristic curriculum and progressive pedagogy with cutting-edge technology.
- Instill the notion of lifelong learning through stimulating research, Outcomes-based education, and innovative thinking.
- Integrate global needs and expectations through collaborative programs with premier universities, research centres, industries, and professional bodies.
- Enhance leadership qualities among the youth having understanding of ethical values and environmental realities

3. About the School

The **School of Medical & Allied Sciences** is a premier school committed to excellence in health education, research, and clinical training. With a multidisciplinary approach, the School offers a wide range of undergraduate, postgraduate, and doctoral programs in fields such as medical sciences, 5 pharmacy, physiotherapy, and other allied health professions. Our mission is to prepare competent healthcare professionals who are equipped with strong academic knowledge, clinical skills, and ethical values. We foster an environment that encourages innovation, evidence-based practice, and lifelong learning.

Supported by experienced faculty, state-of-the-art laboratories, and collaborations with various industries, the School empowers students to become leaders in healthcare delivery and biomedical research. Through its holistic and student-centered education model, the School of Medical & Allied Sciences plays a vital role in shaping the future of healthcare both nationally and globally. Additionally, Our School stands apart through its strong emphasis on industry-academia collaboration, experiential learning, and a future-ready

curriculum designed to meet the evolving demands of the healthcare sector. The curriculum is aligned with current industry standards and healthcare requirements, enabling students to effectively contribute to patient care and clinical support services.

We offer undergraduate programs that emphasize practical exposure through hospital-based training, simulation labs, and internships in leading healthcare institutions. To bridge the gap between classroom learning and clinical application, we involve experienced healthcare professionals and medical experts in the teaching process. Our students benefit from workshops, skill development sessions, industry-led seminars, and career guidance programs focused on the healthcare sector.

The department regularly organizes and participates in community outreach initiatives such as health camps, awareness drives, and first-aid training programs, helping students gain real-world exposure while contributing to public health education. We also assist students with placement opportunities in reputed hospitals, diagnostic centers, emergency services, and specialized healthcare facilities both in India and abroad. Our industry ties include collaborations with organizations such as Fortis Memorial Hospital Ltd., Metro Hospitals, Accord Hospitals, Marengo Asia Hospitals, Tirath Ram Shah Hospital, RG Stone Hospitals, Orange Health Lab, Pathkind Diagnostic Pvt. Ltd., Core Diagnostic , Redcliffe Lab, Aarvey Hospitals & Nephrocare Health Services Pvt. Ltd. Our collaborations with healthcare providers and industry partners ensure that students are well-prepared for diverse roles in patient care, emergency response, critical care assistance, dialysis care and diagnostic technology.

4. School Vision and Mission

Vision

To become a premier educational institution dedicated to empowering students with the knowledge and skills needed to lead in the technology field and enhance healthcare access, thereby making a positive impact on society in India and globally.

Mission

● To empower students to become self motivated, self- reliant and socially aware healthcare professionals, effectively addressing the needs of academia, industry, and research.

● To establish a dynamic center of excellence for learning and research in pharmaceutical and allied health sciences, emphasizing interdisciplinary approaches and fostering collaboration between industry and academia.

● To nurture translational research initiatives that benefit society and improve community health outcomes.

● To integrate pharmaceutical and allied health sciences with interdisciplinary life sciences, promoting innovation and collaboration.

● To offer lifelong learning opportunities in healthcare, equipping professionals with the skills to adapt and excel in a rapidly evolving field.

5. About the Programme

The field of Respiratory Therapy (RT) is vital to the healthcare system, playing a crucial role in saving lives and responding to critical medical situations. It encompasses a wide range of disciplines, including emergency departments, trauma management, pre-hospital care, life support techniques, disaster response, and patient transportation. As the demand for skilled emergency responders grows, the need for well-trained professionals in this field continues to rise significantly.

The B.Sc. (Hons.) Respiratory Therapy program is designed to provide students with a comprehensive understanding of respiratory anatomy, physiology, and pathology, along with the technical skills required for diagnosing and managing patients with cardiopulmonary disorders. The curriculum emphasizes critical thinking, clinical decision-making, and adherence to medical ethics. Through a balanced combination of classroom instruction, practical training, clinical postings, and a compulsory internship, the program prepares graduates to work competently in high-acuity settings such as intensive care units, emergency departments, and pulmonary rehabilitation centres. It also aims to produce healthcare professionals who are not only well-informed and clinically skilled but also socially responsible and adaptable to advancements in Respiratory Therapy.

At K. R. Mangalam University, we prioritize hands-on, practical education. This program integrates classroom instruction with real-world applications, offering students the opportunity to train in emergency simulations, hospital internships, ambulance ride-alongs, and clinical postings. This experiential learning model enhances students' practical skills, critical thinking, quick decision-making, and teamwork in high-pressure environments. Our curriculum is continuously updated to reflect the latest advancements in emergency medicine and healthcare protocols. By incorporating current best practices and evolving technologies, we ensure our graduates are prepared to meet the dynamic needs of respiratory healthcare systems worldwide.

As frontline responders, respiratory technologists play a key role in delivering immediate care during life-threatening situations. The B.Sc (Hons.) Respiratory Therapy program at K. R. Mangalam University aims to equip and inspire the next generation of RT professionals to respond with confidence, competence, and compassion.

We are dedicated to providing a nurturing and inclusive learning environment where students can explore their interests, strengthen their skills, and achieve their full potential. With the support of experienced faculty, access to modern labs and training facilities, and a collaborative academic culture, we are committed to offering a transformative educational experience that prepares students for meaningful careers in respiratory services.

We warmly invite aspiring students to join us on this impactful journey as we prepare to serve communities, save lives, and contribute to the ever-evolving field of Respiratory Therapy.

5.1 Definitions

Programme Outcomes (POs)

Programme Outcomes are statements that describe what the students are expected to know and would be able to do upon graduation. These relate to the skills, knowledge, and behavior that students acquire through the programme.

Programme Specific Outcomes (PSOs)

Programme Specific Outcomes define what the students should be able to do at the time of graduation and they are programme specific. There are two to four PSOs for a programme.

Programme Educational Objectives (PEOs)

Programme Educational Objectives of a degree programme are the statements that describe the expected achievements of graduates in their career, and what the graduates are expected to perform and achieve during the first few years after graduation.

Credit

Credit refers to a unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to 14-15 periods for theory or 28-30 periods for workshop/labs and tutorials

5.2 Programme Educational Objectives (PEOs*)*

PEO1: Professional Competence: Graduates will acquire in-depth knowledge and practical skills in respiratory care, enabling them to competently perform diagnostic, therapeutic, and emergency respiratory procedures in diverse clinical settings.

PEO2: Ethical and Responsible Practice: Graduates will uphold ethical standards, ensure patient safety, maintain confidentiality, and deliver compassionate care while adhering to established clinical protocols.

PEO3: Teamwork and Leadership: Graduates will work effectively as part of multidisciplinary healthcare teams and demonstrate leadership capabilities in Respiratory Therapy services and critical care units.

PEO4: Lifelong Learning and Career Advancement: Graduates will pursue continuous professional

development, advanced certifications, and research opportunities to stay updated with advancements in respiratory care and critical care technology.

PEO5: Research and Innovation: Graduates will engage in clinical research, promote innovation in respiratory diagnostics, therapy, and contribute to evidence-based practice and healthcare improvements.

5.3 Programme Outcomes (POs)

PO1: Disciplinary Knowledge:- Apply core knowledge of respiratory care, pulmonary diagnostics, and mechanical ventilation protocols in both acute and chronic respiratory conditions.

PO2: Critical Thinking:- Analyze respiratory function and clinical data to make timely, evidence-based decisions during critical care and emergency scenarios.

PO3: Effective Communication:- Communicate clearly and effectively with patients, families, and healthcare teams to ensure safe and coordinated respiratory care delivery.

PO4: Social Interaction:- Collaborate efficiently within multidisciplinary teams while showing empathy and professionalism in diverse clinical settings.

PO5: **Effective Citizenship:-** Promote respiratory health and contribute to public health initiatives by recognizing the role of respiratory technologists in society.

PO6: Ethics:-Uphold ethical standards by maintaining patient confidentiality, obtaining informed consent, and delivering care with integrity.

PO7: Environmental and Sustainability:-Apply sustainable practices in respiratory care services, such as efficient oxygen usage and biomedical waste disposal.

PO8: Self-Directed and Lifelong Learning:- Commit to lifelong learning by staying updated with advancements in respiratory therapies, ventilatory technologies, and evidence-based care.

PO9: Research-Related Skills:- Engage in or support clinical research to improve respiratory care outcomes and contribute to innovation in pulmonary medicine.

PO10: Scientific Interpretation:- Interpret respiratory diagnostic reports like ABG, PFT, and radiological data to guide patient management effectively.

PO11: Information and Digital Literacy: - Use respiratory care software, digital records, and monitoring systems to manage patient data and optimize Respiratory Therapy practices.

5.4 Programme Specific Outcomes (PSOs)

PSO1: Respiratory Diagnostic and Therapeutic Skills: Apply theoretical knowledge and technical proficiency to perform diagnostic tests such as pulmonary function tests (PFTs), arterial blood gas (ABG) analysis, and administer therapeutic interventions including oxygen therapy, aerosol therapy, and chest physiotherapy.

PSO2: Ventilator and Equipment Management: Operate, maintain, and troubleshoot respiratory care equipment such as mechanical ventilators, CPAP/BiPAP machines, and oxygen delivery systems, while ensuring adherence to safety and quality control standards.

PSO3: Critical and Emergency Respiratory Care: Assist in managing acute respiratory emergencies, provide ventilatory support in ICUs, and respond effectively during cardiopulmonary resuscitation (CPR) and code blue situations.

PSO4: Documentation and Infection Control: Maintain accurate clinical records, Respiratory Therapy logs, and strictly follow protocols related to infection control, biomedical waste management, and patient safety within respiratory care settings.

5.5 Career Avenues

Diverse career opportunities available to graduates of the B.Sc (Hons.) Respiratory Therapy program include:

Respiratory Technologist: Work in hospitals, critical care units, emergency departments, and rehabilitation centers to assess, treat, and manage patients with acute or chronic cardiopulmonary conditions. Responsibilities include ventilator management, airway care, and oxygen therapy.

Pulmonary Function Test Technologist: These professionals specialize in conducting diagnostic tests like spirometry, plethysmography, and diffusion studies to assess lung function in patients with asthma, COPD, and other pulmonary conditions

Sleep Lab Technologist (Polysomnography Technologist) : They monitor and evaluate patients for sleep-related disorders such as sleep apnea by conducting overnight sleep studies and interpreting physiological data.

Clinical Research Associate (Respiratory Focused): Clinical research associates help design and conduct clinical trials focused on respiratory therapies, medical devices, or interventions, ensuring compliance with clinical protocols and ethical standards.

Home Respiratory Care: These professionals provide care and support to patients with chronic respiratory conditions in home settings, often involving portable oxygen therapy, nebulization, and patient education.

Equipment Specialist / Application Specialist: They manage and demonstrate the use of respiratory care equipment like CPAP/BiPAP, Ventilator machines, and nebulizers for hospitals or medical device companies.

Critical Care Technologist: Working in intensive care units, these technologists collaborate with physicians to manage advanced life-support systems, ensuring patient stability through mechanical ventilation and monitoring.

Health Educator / Patient Counsellor (Respiratory Health): These professionals promote awareness of respiratory diseases, smoking cessation, asthma management, and pulmonary rehabilitation through public education programs and individual counselling.

Academic And Teaching Roles: Graduates can pursue careers in academic institutions as educators or clinical instructors, helping train future respiratory care professionals in both theoretical and practical components.

Roles in Healthcare Administration / Hospital Management: With additional training or experience, graduates may take on supervisory or managerial roles in respiratory departments, managing staffing, budgeting, equipment procurement, and compliance with healthcare standards.

5.6 Duration

The course of study for B.Sc. (Hons.) Respiratory Therapy shall extend over a period of eight semesters (four academic years) and six semesters (three academic years) for lateral entry students. The curriculum and syllabi for the program shall be designed in accordance with the guidelines prescribed by relevant national healthcare bodies and updated periodically to reflect current industry practices and advancements in emergency and trauma care.

6. Criteria for award of degree

6.1 Eligibility Criteria

The candidate should have passed 10 + 2 with PCB (Physics, Chemistry and Biology) or its equivalent examination from a recognized board with a minimum of 50% marks in aggregate. The reservation and relaxation for SC/ST/OBC/PWD and other categories shall be as per rules of the central government, whichever is applicable.

6.2 Eligibility Criteria for Award of Degree

The minimum credit points required for the award of a B.Sc.(Hons.) Respiratory Therapy (B.Sc. RT) degree is 172. These credits are distributed across Theory courses, Tutorials, Practicals, Internships, and Research Projects over the duration of eight semesters.

Learners are expected to follow the semester-wise schedule of courses as outlined in the syllabus. The curriculum includes a combination of classroom instruction, hands-on clinical training, and field postings to ensure holistic development of both theoretical knowledge and practical skills.

Internships and project work, particularly in Semesters VII and VIII, carry significant weight, contributing a total of 40 credit points across both semesters (20 credits each), emphasizing the importance of clinical exposure and real-world application.

The lateral entry students shall get 48 credit points transferred from their Diploma in Respiratory Therapy or an equivalent paramedical diploma program. Such students shall take up additional remedial courses of 'Communication Skills for Healthcare Professionals' (Theory and Practical) and 'Introduction to Computing' (Theory and Practical) equivalent to 3 and 4 credit points respectively, a total of 7 credit points, to attain 55 credit points, the maximum equivalent of I and II semester.

7. Student's Structured Learning Experience from Entry to Exit in the Programme

● Learn to Earn a Living:

At KRMU we believe in equipping students with the skills, knowledge, and qualifications necessary to succeed in the job market and achieve financial stability. All the programmes are tailored to meet industry demands, preparing students to enter specific careers and contributing to economic development.

● Learn to Live:

The university believes in the holistic development of learners, fostering sensitivity towards society, and promoting a social and emotional understanding of the world. Our aim is to nurture well-rounded individuals who can contribute meaningfully to society, lead fulfilling lives, and engage with the complexities of the human experience.

University Education Objective**: Focus on Employability and Entrepreneurship through Holistic Education using Bloom's Taxonomy.**

By targeting all levels of Bloom's Taxonomy—remembering, understanding, applying, analysing, evaluating, and creating—students are equipped with the knowledge, skills, and attitudes necessary for the workforce and entrepreneurial success. At KRMU we emphasize on learners' critical thinking,

problem-solving, and innovation, ensuring application of theoretical knowledge in practical settings. This approach nurtures adaptability, creativity, and ethical decision-making, enabling graduates to excel in diverse professional environments and to innovate in entrepreneurial endeavours, contributing to economic growth and societal well-being.

Importance of Structured Learning Experiences:

A structured learning experience (SLE) is crucial for effective education as it provides a clear and organized framework for acquiring knowledge and skills. By following a well-defined curriculum, teaching-learning methods and assessment strategies, learners can build on prior knowledge systematically, ensuring that foundational concepts are understood before moving on to more complex topics. This approach not only enhances comprehension but also fosters critical thinking by allowing learners to connect ideas and apply them in various contexts. Moreover, a structured learning experience helps in setting clear goals and benchmarks, enabling both educators and students to track progress and make necessary adjustments. Ultimately, it creates a conducive environment for sustained intellectual growth, encouraging learners to achieve their full potential. At K.R. Mangalam University SLE is designed as rigorous activities that are integrated into the curriculum and provide students with opportunities for learning in two parts:

Inside Classroom

A structured approach within the classroom focuses on the following key aspects: ● **Cognitive Outcomes:** Classroom learning aims to enhance critical thinking, problem-solving, and decision-making skills. These outcomes help students develop a deep understanding of emergency practices, and healthcare challenges.

● **Student-Centric Learning**: The learning process is designed to actively involve students, fostering an environment of inquiry and engagement. This may include discussions, case studies, group projects, and interactive sessions to personalize the learning experience.

● **Methods and Approaches**: Diverse teaching methods are employed to enhance cognitive development. These include:

✔ **Lectures:** For foundational understanding.

✔ **Group Discussions:** To facilitate peer learning.

✔ **Case Studies:** To promote application of theory in real-life scenarios.

✔ **Problem-Based Learning (PBL):** Focuses on active problem-solving and research.

● **Tools and Techniques**: Technology and modern educational tools enhance classroom experiences. Examples include:

✔ **E-learning platforms and multimedia modules** for visualizing trauma protocols, emergency response workflows, and anatomy relevant to critical care.

✔ **VR lab sessions** that simulate real-life emergency scenarios such as cardiac arrest, accident trauma, or mass casualty incidents—helping students practice triage, patient assessment, and decision-making under pressure in a safe, immersive environment.

✔ **Interactive software and apps** for interpreting ECGs, monitoring vital signs, and simulating ambulance operations and ICU procedures.

✔ **Simulation mannequins and skill trainers** for hands-on practice of Basic and Advanced Life Support (BLS, ACLS), airway management, IV cannulation, and CPR.

✔ **Hospital-based simulation labs** and field postings that reinforce clinical judgment, patient communication, and protocol adherence in real-time conditions.

Outside Classroom

Experiences outside the classroom are designed to develop both psychomotor and people skills. These practical experiences help students integrate knowledge with hands-on practice:

• **Hospital Internships and Clinical Postings**: Students are exposed to real-time emergency settings in hospitals, where they observe and assist in trauma care, resuscitation, and pre-hospital management, bridging classroom learning with critical on-ground application.

• **Ambulance-Based Training:** Practical exposure in mobile intensive care units and ambulances trains students in patient transportation, on-the-spot stabilization, and quick decision-making under pressure.

• **Simulation-Based Learning**: High-fidelity simulations replicate trauma and emergency scenarios, enabling students to practice clinical decision-making, teamwork, and technical interventions in a controlled environment.

• **Collaborative Research Projects:** Participation in case-based research and quality improvement projects nurtures critical thinking, scientific inquiry, and inter-professional collaboration.

• **Fieldwork and Emergency Drills:** Students participate in disaster drills, community first-aid camps, and outreach programs, helping them build communication, leadership, and public health response skills.

8. Learning and Development Opportunities

The B.Sc.(Hons.) Respiratory Therapy programme is structured around the educational philosophy of "Learn to Save Lives" and "Learn to Serve Humanity," delivering a holistic, career-oriented learning journey from foundation to advanced practice.

A well-defined academic plan ensures the structured and timely execution of the curriculum. The following components contribute to effective implementation and continuous enhancement of the learning experience: scheduled theory and practical sessions, regular clinical exposure in emergency departments, use of simulation-based modules, assessments aligned with real-world competencies, feedback-driven learning improvements, and integration of ethical, legal, and communication skills essential for emergency care professionals.

8.1 Laboratories and Practical Learning

Laboratories serve as a vital platform for hands-on learning that reinforces theoretical knowledge through practical applications. In the B.Sc. (Hons.) RT programs, specialized labs such as Respiratory Emergency Care Skills Lab, Anatomy & Physiology Lab, Microbiology Lab, and Simulation Labs enable students to practice life-saving procedures, analyze clinical samples, and learn the use of emergency medical equipment. Regular practical sessions help develop technical proficiency, clinical judgment, precision, and critical thinking skills essential for respiratory emergency care professionals.

8.2 Experiential Learning

Experiential learning bridges the gap between classroom knowledge and real-world practice. Students gain exposure through internships in hospitals, emergency departments, ambulance services, and pre-hospital care settings. Field postings, mock drills, and industrial visits further acquaint students with operational environments. This mode of learning fosters teamwork, quick decision-making, patient-centered communication, and professional conduct under real-life scenarios.

8.3 Case-Based Learning/ Problem-Based Learning/ Project-Based Learning

These student-centric approaches promote analytical thinking and problem-solving in emergency care situations:

- **Case-Based Learning (CBL):** Students analyze real-life respiratory emergency scenarios and suggest evidence-based interventions.

- **Problem-Based Learning (PBL):** Open-ended clinical problems encourage inquiry and collaborative problem-solving.

- **Project-Based Learning**: Students work on long-term projects related to disaster preparedness, community respiratory emergency response, or innovative respiratory emergency care solutions, enhancing research, planning, execution, and presentation skills.

8.4 Workshops, Seminars, Guest Lectures

Skill-building workshops on advanced life support, trauma management, disaster response, and use of specialized equipment form a crucial part of the curriculum. Seminars and conferences encourage

academic discussions and keep students updated with the latest practices in emergency medical services. Guest lectures by emergency physicians, paramedics, disaster managers, and industry experts provide insights into career pathways, new technologies, and global trends in RT.

8.5 Inside & Outside Classroom Learning

Learning is enriched through multiple modes beyond traditional classrooms. Flipped classrooms, blended learning modules, and simulation-based training are used alongside learning management systems (LMS), e-learning platforms, and peer group discussions. Outside-classroom activities like participation in health camps, community emergency drills, first-aid awareness drives, and extension activities help students develop a sense of social responsibility and community service.

8.6 Holistic Education

Holistic development is a key focus of the RT program. Students are encouraged to develop intellectual, emotional, ethical, and physical well-being through value-based learning, stress management workshops, leadership training, yoga, and mindfulness activities. Participation in sports, extracurricular activities, and student clubs helps build confidence and team spirit, ultimately shaping competent, empathetic respiratory professionals dedicated to lifelong learning.

9. Assessment and Evaluation

Grading Policies and Procedures for theory courses, practical courses, projects, Internships, Dissertation: As per university examination policy of K R Mangalam University, the Program Outcome assessments is done by aggregating both direct and indirect assessments, typically assigning 80% weightage to direct assessment and 20% to indirect assessments, to compute the final course attainment.

EVALUATION SCHEME:

For Theories:

<table>
<tr><td colspan="3">Evaluation Components</td><td>Weightage</td></tr>
<tr><td rowspan="8">Internal Evaluation (Theory) – I) Continuous Assessment (30 Marks)</td><td>Components</td><td>Marks</td><td rowspan="8">30Marks</td></tr>
<tr><td>I. Quizzes</td><td>5</td></tr>
<tr><td>II. Presentations</td><td>5</td></tr>
<tr><td>III. Assignments</td><td>5</td></tr>
<tr><td>IV. Class Participation</td><td>02</td></tr>
<tr><td>V. Case Studies</td><td>05</td></tr>
<tr><td>VI. Reflective Journals</td><td>03</td></tr>
<tr><td>VII. Attendance</td><td>05</td></tr>
</table>

Internal Evaluation (Theory) - Mid Term Exam	20Marks
External Evaluation (Theory): End Term Examination	50marks
Total	100 marks

Note: It is compulsory for a student to secure 40% marks in Internal and End Term Practical Exam and Viva Voce separately to secure minimum passing grade.

For Practicals:

Evaluation Components			Weightage
Internal Evaluation (Practical) – I) Continuous Assessment (30 Marks)	Components	Marks	50Marks
	1. Conduct of Experiment	10	
	2. Lab Records	10	
	3. Lab Participation	10	
	4. Lab Project	20	
External Marks (Practical): - End term Practical Exam and Viva Voce			50Marks
Total			100 marks

Note: It is compulsory for a student to secure 40% marks in Internal and End Term Practical Exam and Viva Voce separately to secure minimum passing grade.

For Internships:

Evaluation Components		Weightage
Internal Evaluation (Internship) – I)Components	Marks	100Marks
Continuous Assessment (30 Marks) 1. Attendance	20	
2.Case study	30	100Marks
3. Practical Skill's book	50	
External Marks (Internship): - Dissertation and Viva Voce		
Total		200 marks

10. Practical Training and Internships

10.1 Practical Evaluation:

Students undergo practical evaluations as part of each course module, carrying a total of 100 marks—with 50 marks for internal assessment and 50 marks for end-term practical and viva voce. The internal assessment includes conduct of experiments (10 marks), lab records (10 marks), lab participation (10 marks), and lab project work (20 marks). Students must secure a minimum of 40% marks in both internal and external components to pass.

10.2 Internship Evaluation:

The internship is evaluated out of 200 marks, with 100 marks for internal assessment based on attendance (20 marks), case study (30 marks), and practical skills book (50 marks), and 100 marks for external evaluation through dissertation and viva voce. A minimum of 40% must be secured separately in both internal and external assessments for successful completion.

11. Feedback and Continuous Improvement Mechanisms

Teaching-learning is driven by outcomes. Assessment strategies and andragogy are aligned to course

outcomes. Every CO is assessed using multiple components. The attainment of COs is calculated for every course to know the gaps between the desired and actual outcomes. These gaps are analysed to understand where the student lags in terms of learning levels. Thereafter each student's learning levels are ascertained, if found below desirable level, and intervention strategy is affected in the following semester to make necessary corrections. To cater to the diverse learning needs of its student body, K.R. Mangalam University employs a comprehensive assessment framework to identify both slow and advanced learners. Students' learning levels are continually assessed based on their performance at various stages. If a student's performance in internal assessments falls below or equal to 55%, they are categorized as slow learners. Conversely, if a student's performance score in internal assessments is greater than or equal to 80%, they are identified as advanced learners. Such students are encouraged to participate in advanced learning activities. Through periodic evaluations and the utilization of modern management systems, the institution adeptly tracks students' performance across various courses, allowing for targeted interventions and support mechanisms.

12. Academic Integrity and Ethics

The School of Medical and Allied Sciences places a strong emphasis on academic integrity and ethics, fostering a culture of honesty and responsibility among students. Clear guidelines are established to educate students about the importance of plagiarism prevention, proper citation practices, and ethical sourcing in their work. Regular workshops and seminars are conducted to discuss case studies and real-world scenarios, encouraging critical thinking about ethical dilemmas in the healthcare system. Faculty members serve as role models, promoting transparency and accountability in their interactions and evaluations. By instilling these values, the school prepares students to uphold high ethical standards

in their professional careers, emphasizing the critical role that integrity plays in the healthcare system.

13. Programme Scheme:

S. No.	Category of Course	Course Code	Course	L	T	P	C	Hours/Week
1.	**Major-I**	BPAH101	Human Anatomy & Physiology - I	3	1	0	4	4
2.	**Major-II**	BPRT102	Introduction to Respiratory Therapy	3	1	0	4	4
3.	**Minor-I**	BPAH103	Biochemistry	3	0	0	3	3
4.	**Ability Enhancement course-I AEC-I**	BPAH104	Professional Communication and Soft Skills in Healthcare I	3	0	0	3	3
5.	**Skill Enhancement Course -I SEC-I**	BPAH105	Introduction to Quality and patient safety	2	0	0	2	2
6.	**Value Added Course-I VAC I**	BPAH106	Healthcare Informatics and Data Analytics	2	0	0	2	2
7.	**Major -I (Practical)**	BPAH151	Human Anatomy & Physiology - I	0	0	2	1	2
8.	**Major -II (Practical)**	BPAH152	Introduction to Respiratory Therapy	0	0	2	1	2
9.	**Minor I(Practical)**	BPAH153	Biochemistry	0	0	2	1	2
10.	**Skill Enhancement Course -I SEC-I (Practical)**	BPAH154	Introduction to Quality and patient safety	0	0	2	1	2
Total				**15**	**2**	**8**	**22**	**26**
Semester-II								
S. No.	**Category of Course**	**Course Code**	**Course**	**L**	**T**	**P**	**C**	**Hours/Week**
1.	**Major-III**	BPAH201	Human Anatomy & Physiology - II	3	1	0	4	4
2.	**Major-IV**	BPRT202	Respiratory Therapy - Basic	3	1	0	4	4
3.	**Minor-II**	BPAH203	Microbiology	3	0	0	3	3

4.	**Multidisciplnary -I MDP-I**	BPAH204	Fundamentals Computer	2	0	0	2	2
5.	**Ability Enhancement course-II**	BPAH 205	Professional Communication and	3	0	0	3	3

	AEC-II		Soft Skills in Healthcare II					
6.	**Value Added Course-II VAC II**	BPAH206	Self Awareness	2	0	0	2	2
7.	**Major -II (Practical)**	BPAH251	Human Anatomy & Physiology - II	0	0	2	1	2
8.	**Minor - II(Practical)**	BPAH253	Microbiology	0	0	2	1	2
9.	**Multidisciplinar y -I MDP I(Practical)**	BPAH254	Fundamentals Computer	0	0	2	1	2
Total				**16**	**2**	**6**	**21**	**24**
Semester-III								
S. No.	**Category of Course**	**Course Code**	**Course Title**	**L**	**T**	**P**	**C**	**Hours/Week**
1.	**Major-V**	BPRT301	Respiratory Disorders	3	1	0	4	4
2.	**Major-VI**	BPRT302	Applied Pharmacology	3	1	0	4	4
3.	**Minor-III**	BPRT303	Basic Respiratory Therapeutics & Monitoring	3	0	0	3	3
4.	**Multidisciplinar y -II MDP-II**	BPAH304	Accounting and finance	3	0	0	3	3
5.	**Ability Enhancement course-II AEC-II**	BPAH305	##Mental Health & Holistic Well Being	**3**	0	0	**3**	3
6.	**Skill Enhancement Course -II**	BPAH306	Preventive and Social Medicine	2	0	0	2	2

	SEC-II							
7.	**Value Added Course VAC-III**	BPAH307	Managing People and Organizations	2	0	0	2	2
8.	**Major - V(Practical)**	BPRT351	Respiratory Disorders	0	0	2	1	2
9.	**Major - VI(Practical)**	BPRTI352	Applied Pharmacology	0	0	2	1	2
10.	**Minor-III (Practical)**	BPRT353	Basic Respiratory Therapeutics & Monitoring	0	0	2	1	2
Total				**19**	**2**	**6**	**24**	**27**

Mental Health & Holistic Well-Being is an online MOOC course via SWAYAM-NPTEL, registered in Semester 2 and completed by Semester 3. Certificate submission to the MOOC Coordinator is mandatory after completion.

Semester-IV								
S. No.	**Category of Course**	**Course Code**	**Course**	**L**	**T**	**P**	**C**	**Hours/Week**
1.	**Major-VII**	BPRT401	Respiratory Therapy - Clinical I	3	1	0	4	4
2.	**Major-VIII**	BPRT402	Respiratory Therapy - Applied I	3	1	0	4	4
3.	**Major-IX**	BPRT403	Respiratory Therapy - Advanced I	3	1	0	4	4
4.	**Multidisciplinar y -III MDP-III**	BPAH404	Disaster Management & Environmental Sciences	3	0	0	3	3
5.	**Skill Enhancement Course -III SEC-III**	BPRT405	Chest Physical Therapy and Pulmonary Rehabilitation	2	0	0	2	2
6.	**Value Added Course VAC-IV**	BPAH406	Entrepreneurship in Allied Healthcare	2	0	0	2	2
7.	**Major - VII(Practical)**	BPRT451	Respiratory Therapy - Clinical I	0	0	2	1	2
8.	**Major - VIII(Practical)**	BPRT452	Respiratory Therapy -	0	0	2	1	2

			Applied I					
9.	**Major-IX (Practical)**	BPRT453	Respiratory Therapy - Advanced I	0	0	2	1	2
Total				**16**	**3**	**6**	**22**	**25**

Semester-V								
S. No.	**Category of Course**	**Course Code**	**Course Title**	**L**	**T**	**P**	**C**	**Hours/Week**
1.	**Major-X**	BPRT501	Respiratory Therapy - Clinical II	3	1	0	4	4
2.	**Major-XI**	BPRT502	Respiratory Therapy - Applied II	3	1	0	4	4
3.	**Minor-IV**	BPRT503	Respiratory Therapy - Advanced II	3	0	0	3	3
4.	**Skill Enhancement Course-IV SEC IV**	BPAH504	Advanced Intensive Care (BLS, ACLS, PALS & NALS)	2	0	0	2	2
5.	**Major - X(Practical)**	BPRT551	Respiratory Therapy - Clinical II	0	0	2	1	2
6.	**Major - XI(Practical)**	BPRT552	Respiratory Therapy - Applied II	0	0	2	1	2
7.	**Minor-IV (Practical)**	BPRT553	Respiratory Therapy - Advanced II	0	0	2	1	2
8.	**Skill Enhancement Course SEC-IV (Practical)**	BPAH554	Advanced Intensive Care (BLS, ACLS, PALS & NALS)	0	0	2	1	2
9.	**#Summer Internship**	BPSI555	Internship	0	0	8	4	8
Total				**11**	**2**	**16**	**21**	**29**
#Summer Internship- students have to complete 4 weeks internship during the summers and submit a completion certificate.								
Semester-VI								
S. No.	**Category of Course**	**Course Code**	**Course**	**L**	**T**	**P**	**C**	**Hours/Week**
1.	**Major-XII**	BPRT601	Pulmonary	3	1	0	4	4

			Function Testing					
1.	**Major-XII**	BPRT601	Pulmonary Function Testing	3	1	0	4	4
1.	**Major- XII**	BPRT601	Pulmonary Function Testing	3	1	0	4	4
2.	**Major-XIII**	BPRT602	Ventilator Management	3	1	0	4	4
3.	**Major-XIV**	BPRT603	Life Support System	3	1	0	4	4
4.	**Minor-V**	BPAH604	Hospital Administration	3	0	0	3	3
5.	**Minor-VI**	BPAH605	Research Methodology & Biostatistics	3	0	0	3	3

6.	**Major -XII (Practical)**	BPRT651	Pulmonary Function Testing	0	0	2	1	2
7.	**Major -XIII (Practical)**	BPRT652	Ventilator Management	0	0	2	1	2
8.	**Major -XIV (Practical)**	BPRT653	Life Support System	0	0	2	1	2
9.	**Minor-V (Practical)**	BPAH654	Hospital Administration	0	0	2	1	2
Total				**15**	**3**	**8**	**22**	**26**

Bachelor's Degree (Honours) Semester-VII							
S. No.	**Category of Course**	**Course Code**	**Course**	**L**	**T**	**P**	**C**
1	Internship I	BPRT751	Internship	**0**	**0**	40	20
Total						40	20
Bachelor's Degree (Honours) Semester-VIII							
1	Internship II	BPRT851	Internship			40	20
Total						40	20
##The internship will be conducted over a term of one year, mandatory in the VII and VIII semesters. Credits will be awarded upon submission of the internship certificate, dissertation,							

and successful completion of the viva voce examination..

SUMMARY:

S.No	Category Of Courses		Credit Per Course	Total Credit As Per Category		No. Of Courses In the Entire Programme	Placement In Semseter
1.	Major	Theory	4	56	69	14	ALL SEMESTER
		Practical	1	13		13	
2.	Minor	Theory	3	18	23	6	I,II,III,V&VI SEMESTER
		Practical	1	05		5	
3.	Multidisciplinary	Theory	2/3	08	09	3	II,III,IV SEMESTER
		Practical	1	01		1	
4.	AEC	Theory	3	09		3	I,II&III SEMESTER
5.	SEC	Theory	2	08	10	4	I,III,IV&V SEMESTER
		Practical	1	02		2	
6.	VAC	Theory	2	08		4	I,II,III,IV SEMESTER
7.	Summer Internship	Posting	4	04		1	V SEMESETER
8.	Internship And Dissertation	Posting	20	40		2	VII &VIII SEMESETER
	TOTAL			172		58	

Semester wise distribution:

Semester	Credit Points
I	22
II	21
III	24
IV	22
V	21
VI	22
VII	20
VIII	20
Extra Curricular	1
Total Credits	172+1=173

Total Credits: 172+01=173

The program includes a minimum of 172 credits, plus 1 additional credit for extracurricular activities within the course structure. The credit points assigned for extra curricular shall be submitted to the university, the criteria to acquire this credit point shall be defined by the university from time to ti

Policy for Awarding Extracurricular Credit

Allied Sciences Program

Eligibility & Timeline:

- Students may apply for 1 extracurricular credit at the end of the 4th year before internship completion.
- Credit is awarded once per program based on verified activities throughout the course.

Approved Activities:

Credit may be claimed for:

1. Sports & Cultural Events – State/National/International competitions.
2. Awards/Prizes – Recognition at state, national, or international levels in academics, research, or extracurricular fields.
3. Community Service – NSS, health camps, environmental or social initiatives.
4. Leadership Roles – Student Council, event organizing committees.
5. Professional Development – Research presentations, workshops, conferences.

Requirements:

Submission of:

- Certificates/Award letters
- Event reports (if applicable)
- Faculty mentor recommendation

Approval Process:

1. Program Coordinator – Verifies documents and recommends credit.
2. Academic Coordinator – Reviews and forwards for final approval.
3. Dean – Grants final approval for credit inclusion.

Credit Award:

- Credit is non-graded and recorded in the transcript.
- Maximum: 1 extracurricular credit per student.

Submission Deadline:

- Application with documents must be submitted before internship completion in the 4th year.

14. BRIEF DETAILED SYLLABUS:

SEMESTER I					
Course Code BPAH101	**Course Title** Human Anatomy & Physiology - I	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-I				
Total Contact Hours	45 HRS				
Pre-Requisites/ Co-Requisites	**Pre-requisite:** Basic knowledge of Biology and Chemistry at 10+2 level. **Co-requisite:** Medical Terminology and Introduction to Human Anatomy and Physiology.				

Course Perspective:

This course lays the foundation for careers in healthcare and allied sciences by providing essential knowledge of the human body's structure and function. It helps students understand how organ systems work individually and together to maintain health, forming the basis for clinical subjects like pathology and pharmacology. Students gain skills in identifying anatomical structures, understanding physiological processes, and applying this knowledge in real-life healthcare situations—such as interpreting vital signs or recognizing symptoms of common disorders. The course enhances scientific thinking, preparing students for academic growth and professional roles in medical and allied health fields.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Remember and recall fundamental organization of the human body and basic cellular structure, physiology, and tissue types.
CO 2: Understand and explain the structure and functions of the musculoskeletal, nervous, and endocrine systems and identify associated common disorders.

CO 3: Apply the anatomy and physiology of the cardiovascular and respiratory systems and relate them to clinical conditions.

CO 4: Analyze the structure and functions of the digestive, urinary, and reproductive systems and evaluate their common dysfunctions.

Course Outline:

Unit number-1	Title: Fundamentals of Human Anatomy, Physiology, and Cellular Biology	No. of hours-8
Anatomy and physiology basics, body organization, systems, and cell structure. Homeostasis, cell division, signaling, tissues, histology, and clinical case review.		
Unit number-2	**Title: Musculoskeletal System: Structure, Function, and Disorders**	**No. of hours-12**
Bone functions, structure, types, and joint classifications with movements. Muscle types, structure, contraction process, and common muscle and skeletal disorders. **Unit number-3 Title: Nervous and Endocrine Systems: Structure, Function, and Disorders**		**No. of hours-8**
Nervous system organization, neuron function, brain, spinal cord, reflexes, and common disorders.Endocrine glands, hormones, regulation, disorders, with case studies and quizzes.		
Unit number-4	**Title: Cardiovascular and Respiratory Systems: Anatomy, Physiology, and Disorders**	**No. of hours-8**
Heart anatomy, blood vessels, blood components, and types of circulation. Respiratory system structure, gas exchange, and common cardiovascular and respiratory disorders. **Unit number-5 Title: Digestive, Urinary, and Reproductive Systems: Structure, Function, and Disorders**		**No. of hours-9**
Digestive system organs, digestion, absorption, and common disorders. Urinary and reproductive system anatomy, functions, hormones, and related disorders.		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online

tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1.Ross & Wilson Anatomy and Physiology in Health and Illness, by **Anne Waugh, Allison Grant**, **13th** Edition **2018** , published by **Elsevier Health Sciences.**

Suggested Readings:

1.**Tortora's Principles of Anatomy & Physiology, by** Tortora, Gerard J.; Derrickson, Bryan, 14th Edition 2017, published by Wiley

2**.Human Anatomy and physiology, by** Bhise, S.B ; Yadav, A.V, 6th Edition 2024, published by Nirali Prakashan

Open Educational Resources (OER):

1. https://openstax.org/details/books/anatomy-and-physiology
2. https://opentextbc.ca/anatomyandphysiology/
3. https://med.libretexts.org/Bookshelves/Anatomy_and_Physiology

Practical

SEMESTER I					
Course Code BPAH151	**Course Title** Human Anatomy & Physiology – I Practical	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major –I Practical				
Total Contact Hours	30 Hrs				
Pre-Requisites/Co-Requisi tes	Pre-requisite**:** Basic knowledge of high school-level biology, especially human anatomy and physiology Co-requisite: Should be taken alongside introductory practical/lab sessions in anatomy and physiology for hands-on understanding				

Course Perspective:

This course builds a foundational understanding of human anatomy and physiology essential for careers in healthcare. It equips learners with core knowledge of body systems, structures, and functions, enabling clinical reasoning and practical application in diagnostics, patient care, and laboratory practices. The course enhances academic growth, supports professional readiness, and bridges theory with real-world healthcare

scenarios.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Demonstrate and identify bones of the upper and lower limbs, thoracic cage, lungs, and heart using dissection models, posters, and simulations.

CO2: **Observe** and describe muscle structure, surface marking, and palpation of thoracic and upper limb muscles.

CO3: **Practice** to measure and record vital physiological parameters and perform basic hematological tests**.**

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1.	Demonstrate Bones of Upper and Lower Limbs with simulation	CO1
2.	Demonstrate Thoracic Cage and Lungs Dissection through models	CO1
3.	Observe Surface Anatomy and Dissection of Heart through models	CO1

4.	Identification of Coronary Arteries and Major Blood Vessels through posters and models	CO1
5.	Demonstrate Study of Thoracic and Upper Limb Muscles	CO2
6.	Understand Muscle Palpation and Surface Marking	CO2
7.	Measure Vital Signs.	CO3
8.	Perform Hemoglobin by Sahli's Method.	CO3
9.	Perform Total Red Blood Cells count,total leucocyte count, differential leucocyte count.	CO3
10.	Perform Calculation of Packed Cell Volume(PCV) &Red cell indices.	CO3

Open Educational Resources (OER):

1.https://www.youtube.com/playlist?list=PL8dPuuaLjXtOAKed_MxxWBNaPno5h3Zs8

2.https://www.getbodysmart.com/

3.https://sites.google.com/umich.edu/bluelink/anatomy-labs

SEMESTER I					
Course Code BPRT102	**Course Title** **Introduction to Respiratory Therapy**	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-II				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	Pre-Requisites **:** Basic knowledge of human anatomy and physiology (especially cardiovascular and respiratory systems) Co-Requisites **:** Participation in introductory clinical orientation or lab-based skill sessions.				

Course Perspective:

This course serves as a foundational entry point into the field of respiratory care. It is designed to introduce students to the core principles, practices, and tools involved in managing patients with respiratory disorders.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Remember and Recall anatomical structures of the respiratory and cardiovascular systems relevant to Respiratory Therapy.
CO2: Understand effective communication for accurate history taking and physical examination.
CO3: Apply comprehensive respiratory and systemic clinical assessments. **CO4: Analyze** physical principles and gas laws to understand, operate, troubleshoot, and ensure safe use of Respiratory Therapy and medical gas delivery systems.

Course Outline:

Unit number-1	**Title –Cell Applied Anatomy and Physiology**	**No. of hours- 10**

Applied Anatomy (Respiratory & Cardiovascular) Covers the structure of the airways, lungs, pleura, respiratory muscles, heart chambers, valves, vessels, and thoracic cavity, anatomical relationships crucial for respiration, circulation, and clinical procedures like auscultation and intubation. Applied Physiology (Respiratory & Cardiovascular) , breathing mechanics, lung volumes, gas exchange, and control of respiration, along with cardiac output, blood pressure, and hemodynamics.		
Unit number-2	**Title**: **History taking and general physical examination**	**No. of hours- 10**

Communication and History taking**,** Communication with Patient, Medical history taking, Symptomatology, history of presenting illness, past history, occupational and personal history, treatment history**,** Clinical Examination - General Physical Examination ,Assessment of vital signs: General appearance, Sensorium, Pulsation, Blood pressure, Respiration, body temperature, fluid balance/hydration, Identifying abnormal signs in general physical examination		
Unit number-3	**Title: Systemic examination**	**No. of hours- 8**
Clinical Examination - Basic Assessment of respiratory system, Inspection, palpation, percussion and auscultation of respiratory system.**,** Definition and significance of the presence of altered resonance, abnormal breath sounds and adventitious sounds, Basic Clinical Assessment of other organ systems **,** Cardiovascular system i.e Symptoms of cardiovascular disease ii. Examination of the precordium and basic cardiovascular functions, Skin and extremities, Neurological system, Abdomen.		
Unit number-4	**Title: Gas Physics**	**No. of hours- 8**
Gas physics- State of matter, density, specific gravity, humidity, Units of measurement, Metric, SI, NTPS, BTPS & conversion, Temperature, Pressure, Volume, Flow, Gas flows and diffusion., Gas laws and its application in respiratory care. Medical gas supply- Compressed gas cylinders, color coding and cylinder storage, cylinders and cylinder valves, diameter index safety system, medical gas pipeline system and station outlets, air compressors and components, oxygen concentrators, alarms and safety devices		
Unit number-5	**Title: Gas Administration Devices**	**No. of hours- 9**
Reducing valves, flow meters, regulators; simple oxygen administration devices; methods of controlling gas flow; reducing valves, flow meters, restrictors, and regulators; selection of devices; precautions, advantages, and disadvantages		

Learning Experience:

Students will gain hands-on experience in understanding the function and safe use of gas administration devices, including pressure reduction, flow measurement, and regulation. Through demonstrations and practical sessions, they will learn device setup, troubleshooting, and the importance of accurate flow control. Learners will also explore different oxygen delivery devices, their clinical indications, advantages, and limitations.

Textbooks:

1. **"Egan's Fundamentals of Respiratory Care"** by **Robert M. Kacmarek, J. M. Stoller, and Al Heuer, 12th** Edition **2020**, Published by **Mosby (Elsevier).**

Suggested Readings:

1. **"Introduction to Respiratory Care"** by David C. Shelledy and Michael D. Johnson, 2nd Edition 2021, published by Jones & Bartlett Learning

2. **"Respiratory Care: Principles and Practice"** by Dean Hess, Neil MacIntyre, William Galvin, Shelley Mishoe, 4th Edition 2020, published by Jones & Bartlett Learning.

Open Educational Resources (OER):

1.https://archive.org/details/respiratorycarep0002unse?utm_source=chatgpt.com

2.https://moys.gov.iq/upload/common/Essential_Respiratory_Medicine_2019.pdf

3.https://archive.org/details/respiratorycarem0000unse

Practical

SEMESTER I					
Course Code BPRT152	**Course Title** **Introduction to Respiratory Therapy**	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	MAJOR II - PRACTICALS				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisi tes	Pre-Requisites **:** Familiarity with human anatomy and physiology fundamentals. Co-Requisites **:** Concurrent enrollment in Respiratory and Cardiovascular Physiology theory is required.				

Course Perspective:

This course introduces the foundational principles in respiratory and cardiovascular anatomy, physiology, and clinical assessment. It equips students with critical knowledge and hands-on skills necessary for understanding human respiratory function, assessing patient status, and using medical gases and delivery systems safely. The course integrates theory with practical applications to prepare students for advanced clinical training in Respiratory Therapy.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Demonstrate the applied anatomy and physiology of the respiratory and cardiovascular systems
CO 2: Observe a structured history taking and general physical examination **CO 3: Practice** a basic respiratory system clinical assessment and identify abnormal findings
CO4: Adapt the knowledge of gas laws and physical properties relevant to

Respiratory Therapy for safe use, selection, and troubleshooting of gas administration

devices

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1.	Demonstration of respiratory and cardiovascular structures using models and charts.	CO1
2.	Perform history taking, GCS/AVPU scale assessment, vital signs measurement (Temperature, Pulse, Respiratory Rate, Blood Pressure).	CO2
3.	Demonstration and interpretation of inspection, palpation, percussion, and auscultation techniques.	CO3
4.	Simulated experiments for Boyle's law, Dalton's law, Fick's law using balloon models and spirometry concepts.	CO3
5.	Perform and apply procedures with oxygen devices: nasal cannula, Venturi mask, non-rebreather, flowmeters, and regulators.	CO4

Open Educational Resources (OER):

1.https://www.respiratorytherapyzone.com/gas-laws/

2.https://openstax.org/books

3.https://www.kenhub.com/en/library/anatomy/

SEMESTER I					
Course Code BPAH103	**Course Title** Biochemistry	**L**	**T**	**P**	**C**
Version	2025	3	0	0	3
Category of Course	Minor-I				
Total Contact Hours	45 hrs				

Pre-Requisites/ Co-Requisites	Pre-requisite: Basic knowledge of Biology and Chemistry at 10+2 level. Co-requisite: Should be taken alongside introductory practical/lab sessions in biochemistry and molecular biology for hands-on understanding.

Course Perspective :

This course builds a strong scientific foundation for careers in healthcare and allied sciences by exploring the chemical principles underlying biological processes. It helps students understand the molecular structure and function of biomolecules such as carbohydrates, proteins, lipids, and nucleic acids, and how these contribute to cellular activities and overall body function. Through this understanding, students are better equipped to grasp clinical subjects like pathology, pharmacology, and nutrition. The course develops essential skills in interpreting biochemical reactions, understanding metabolic pathways, and applying this knowledge to real-life healthcare contexts—such as analyzing laboratory results or recognizing biochemical imbalances in disease. It promotes critical scientific thinking and problem-solving, preparing students for further academic learning and professional responsibilities in medical and allied health fields.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Remember and recall the basic concepts of biochemistry, including the structure and function of biomolecules such as carbohydrates, proteins, lipids, and nucleic acids.

CO 2: Understand and explain key biochemical processes and pathways involved in metabolism, enzyme function, and molecular interactions within the body.

CO 3: Apply biochemical principles to interpret normal physiological functions and relate them to laboratory findings and clinical scenarios.

CO 4: Analyze and evaluate the biochemical basis of common metabolic disorders and understand how metabolic imbalances impact health and contribute to disease progression.

Course Outline:

Unit number-1	**Title: Introduction to Biochemistry and Carbohydrates**	**No. of hours-10**
Introduction to biochemistry, its scope, branches, career options, and key biomolecules. Carbohydrates: types, structures, properties, derivatives, and their biological importance.		
Unit number-2	**Title: Lipids, Proteins, and Nucleic Acids**	**No. of hours-9**
Lipids and fatty acids: types, functions, and clinical relevance. Proteins and nucleic acids: classification, structures, and clinical importance.		
Unit number-3	**Title: Enzymes and Hormones**	**No. of hours-8**
Enzymes: nature, types, properties, factors affecting activity, and inhibition. Hormones: classification, action mechanisms, clinical importance, and diagnostic enzymes.		
Unit number-4	**Title: Vitamins & Minerals**	**No. of hours-9**
Vitamins: Characteristics, Classification, and functions; Dietary sources; and Clinical aspects Minerals: Key minerals and their importance		
Unit number-5	**Title: Metabolic profiles**	**No. of hours-9**
Carbohydrate metabolism(glycolysis),Krebs cycle, Glycogenesis, lipid metabolism,amino acid metabolism, urea cycle		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1.**Medical Biochemistry**, by **Bhagvan, N.V, 4th** Edition **2012, published by** Elsevier

Suggested Readings:

1. **Biochemistry,** by Satyanarayana, U ; Chakrapani, U, 6th Edition 2021, Published by Elsevier. 2. **Biochemistry** by Kulkarni, M.V. et.al, 9th Edition 2008, Published by Nirali PrakashaN

Open Educational Resources (OERS):

1. https://bio.libretexts.org
2. https://ocw.mit.edu/courses/biology/7-05-introductory-biochemistry-spring-2014/
3. https://www.khanacademy.org/science/biology/chemistry--of-life

Practical

SEMESTER I					
Course Code BPAH153	**Course Title** Biochemistry	**L**	**T**	**P**	**C**
Version	2025	0	0	2	1
Category of Course	Minor –I Practical				
Total Contact Hours	30 Hrs				
Pre-Requisites/Co-Requisites	**Pre-requisite:** Basic knowledge of high school-level biology, especially human anatomy and physiology **Co-requisite:** Must be taken alongside introductory practical/lab sessions in biochemistry for hands-on understanding of biochemical techniques and concepts.				

Course Perspective:

This course lays a foundational understanding of biochemistry essential for careers in healthcare and life sciences. It equips learners with core knowledge of biomolecules, metabolic pathways, enzymatic functions, and molecular interactions that govern cellular processes. The course enables scientific reasoning and supports practical application in diagnostics, pathology, pharmacology, and clinical laboratory practices. It enhances academic development, strengthens professional competence, and bridges theoretical concepts with real-world biomedical and healthcare scenarios.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Observe basic biochemistry lab setup, including common glassware, reagents, and

instruments.

CO2: Demonstrate adherence to safety guidelines, ethical conduct, and appropriate waste disposal methods.

CO3: Perform sterilization using various techniques following safety protocols and handling laboratory instruments and hazardous materials, including use of safety equipment.

CO4: Adapt known and unknown carbohydrates through reagent-based test, proteins and comprehensive analysis of unknown biological samples using appropriate biochemical testing methods.

Practical Outline:

S.No	Practical Name	COs
1	Laboratory essential practices Essentials of Laboratory Operations: Introduction to biochemistry laboratory, Common glassware, equipment, chemicals and reagents.	CO1
2	Laboratory safety: Introduction to safety guidelines and laboratory discipline, Bioethical considerations in the laboratory, Laboratory waste management	CO2
3	SOPs of Laboratory instruments: Adherence to safety protocols, handling of hazardous chemicals and equipment, emergency procedures and knowledge of safety equipment and techniques.	CO3
4	Sterilization techniques: Adherence to safety protocols while using various sterilization techniques in biochemistry, Heat, chemical and pressure-based sterilization techniques.	CO3
5	Preparing Reagents and Chemicals: Dilution and mixing techniques, error minimizing, and measurement of chemicals.	CO3
6	Test for macronutrients Test for Carbohydrates: Identification of known and unknown carbohydrates using various reagents and identification methods. Investigative analysis of unknown carbohydrates.	CO4
7	Test for Proteins: Identification of known and unknown proteins using various reagents and identification methods. Investigative analysis of unknown proteins.	CO4
8	Investigative Analysis of Unknown nutrients Unknown Sample Investigation: Comprehensive practical investigation to determine the nature of unknown samples.	CO4

Open Educational Resources (OER):

1. https://bio.libretexts.org

2. https://ocw.mit.edu/courses/biology/7-05-introductory-biochemistry-spring-2014/
3. https://www.khanacademy.org/science/biology/chemistry--of-life
4. https://biochem.science.oregonstate.edu/biochemistry-free-and-easy

SEMESTER I				
Course Code BPAH104	**Course Title** Professional Communication and Soft Skills in Healthcare I	**L**	**T P**	**C**
Version	2025	3	0 0	3
Category of Course	**Ability Enhancement course-I** AEC-I			
Total Contact Hours	45hrs			

Pre-Requisites/ Pre-requisite: Basic proficiency in English language

Co-Requisites	writing, and speaking) at the high school level. Co-requisite: Should be taken alongside practical sessions or workshops in professional communication or soft skills development for applied learning.

Course Perspective:

The course aims to develop effective communication skills among healthcare professionals to enhance patient care, interdisciplinary collaboration, and professional relationships. By the end of the course, students should be able to understand the importance of communication in healthcare settings, demonstrate empathy and active listening, communicate clearly and respectfully with patients and colleagues, and resolve conflicts constructively.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand the Importance of Communication in Healthcare

CO 2: Explain through Verbal and Nonverbal Communication Skills.

CO 3: Apply effective Interdisciplinary Communication.

CO 4: Evaluate the skills of Time management

Course Outline:

Unit number-1	**Title: FIRST IMPRESSION**	**No. of hours-12**

First Impression, Personal Hygiene, Personal Grooming, Uniform Guidelines, Grooming Kit, Quick Fixes / Hacks		
Unit number-2	**Title: NON-VERBAL COMMUNICATION: BODY LANGUAGE AND POSH**	**No. of hours-8**
Body Language, Sexual Harassment		
Unit number-3	**Title: IMPORTANCE OF COMMUNICATIO N**	**No. of hours-8**
Communication, English Language		
Unit number-4	**Title: CONSONANT AND CONSONANT SOUNDS**	**No. of hours-8**
English Language: Consonants, What are Consonants and Consonant Sounds?, Conclusion, Practice Time **Unit number-5 Title: VOWELS No. of hours-9**		

English Language: Vowels, Conclusion, Practice Time, Syllables & Syllable Stress, Conclusion, Practice Time, Listening, Conclusion, Reading, Conclusion

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1.**Health Communication: Strategies for Healthcare Professionals,** by **Michael P. Pagano, 1st** Edition **2016**, Published by **Springer**

Suggested Readings:

1.**Professional Communication,** by Raman, M, 3rd Edition 2011, published by Oxford University Press, New Delhi.
2.**Communication and Soft Skill Development**, by Oswal, R.J.,

Antre, R.V, 3rd Edition 2019, published by Nirali Prakashan

Open Educational Resources (OER):

1.MacEwan Open Books – for Professional Communication Skills PDF

2.FutureLearn – Interpersonal Skills at Work – Free course on professional communication in healthcare and workplace.

3.OpenWHO – Communicating with Patients about Vaccination – WHO course on patient centered communication.

SEMESTER I

Course Code	**Course Title**	**L**	**T P**	**C**
BPAH105	Introduction to Quality and patient safety			
Version	2025	2	0 0	2
Category of Course	SEC-I			
Total Contact Hours	30 hrs			

Pre-Requisites/ Co-Requisites	Pre-requisite: General healthcare understanding. Co-requisite: Should be taken alongside practical sessions on quality improvement tools and patient safety protocols for hands-on applications.

Course Perspective:

Upon completion, Students should be able to apply healthcare quality improvement and patient safety principles, concepts, and methods at the micro-, meso-, and macro-system levels.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand quality care concepts, improvement tools, standards, and NABH guidelines in healthcare settings.
CO 2: Explain the basics of emergency care and life support skills.
CO 3: Analyze harm prevention to workers, property, the environment and the general public.
CO 4: Evaluate knowledge on the principles of on-site disaster management.

Course Outline:

Unit number-1	Title: Quality assurance and Management	No. of hours-9
Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Quality Improvement Tools & Introduction to current NABH guidelines		
Unit number-2	**Title: Basics of emergency care and Life support**	**No. of hours-8**
Vital signs, primary assessment, and basic emergency care including first aid and triage. CPR techniques, use of bag-valve masks, AED operation, and emergency patient management.		
Unit number-3	**Title: Bio medical waste management and environment safety**	**No. of hours-8**
Biomedical waste: definition, segregation, collection, transport, treatment, disposal, and color coding.Waste minimization, PPE use, disinfection methods, modern technologies, and infection control.		
Unit number-4	**Title: Infection prevention**	**No. of hours-9**

Use of PPE and infection control devices to prevent cross infections. Healthcare-associated infection prevention, infection control programs, and NABH/JCI guidelines.		
Unit number-5	**Title: Antibiotic Resistance. Disaster Management**	**No. of hours-11**
History of antibiotics, mechanisms and types of resistance, and trends in drug resistance. Consequences of resistance, bacterial persistence, antibiotic sensitivity, and antimicrobial stewardship in hospitals. Basics of emergency management, psychological impact, and resource planning. Preparedness, risk reduction, and key response roles in public health, logistics, governance, and recovery.		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. **Introduction to Healthcare Quality Management"** by **Patrice L. Spath, MA, RHIT & Kenneth A. DeVane, MBA, MS**, **4th** Edition **2022**, published by **Gateway to Healthcare Management**

Suggested Readings:

1. **"Patient Safety: Achieving a New Standard for Care"** by Philip Aspden, Julie A. Wolcott, J. Lyle Bootman, and Linda R. Cronenwett, 1st Edition 2004, published by National Academies Press, Washington, D.C.
2. **Patient Safety and Healthcare Improvement at a Glance,** bySukhmeet S. Panesar, Andrew Carson-Stevens, Sarah A. Salvilla & Aziz Sheikh, 1st Edition 2014, published by Wiley-Blackwell

Open Educational Resources (OER):

1. https://www.who.int/teams/integrated-health-services/patient-safety
2. https://www.ihi.org/education/IHIOpenSchool
3. https://www.coursera.org/learn/quality-improvement-healthcare
4. https://www.ahrq.gov/patient-safety/index.html

Practical

SEMESTER I					
Course Code BPAH154	**Course Title** Introduction to Quality and patient safety	**L**	**T**	**P**	**C**
Version	2025	0	0	2	1
Category of Course	SEC-II Practical				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisi tes	Pre-requisite: General healthcare understanding. Co-requisite: Should be taken alongside practical sessions on quality improvement tools and patient safety protocols for hands-on applications.				

Course Perspective:

This course lays the foundation and builds an understanding of patient care and safety

essential for careers in healthcare. It equips learners with core knowledge of body systems, structures, and functions, enabling clinical reasoning and practical application in diagnostics, patient care, and laboratory practices. The course enhances academic growth, supports professional readiness, and bridges theory with real-world healthcare scenarios.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Demonstrate principles of quality assurance and patient safety by performing NABH audits, quality indicator analysis, root cause analysis, and the PDCA cycle.

CO2: Perform clinical assessment and emergency response skills including vital sign measurement, primary surveys, CPR, AED usage, and basic life support.

CO3: Observe and apply infection control protocols including biomedical waste segregation, PPE usage, sterilization, and disinfection procedures.

CO4: Analyze infection risks and antimicrobial strategies through HAI surveillance, AST, and antimicrobial stewardship role-play.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
	1. Perform a primary survey using the ABCDE approach.	CO1
2.	Chart and analyze quality indicators (e.g., infection rate).	CO1
3.	Perform root cause analysis (RCA) for a clinical error.	CO2
4.	Practice CPR on adult and child mannequins.	CO2
5.	Use a bag-valve-mask for assisted ventilation.	CO2
6.	Simulate AED usage during cardiac arrest.	CO2
7.	Demonstrate basic first aid techniques.	CO3
8.	Practice biomedical waste segregation by color coding.	CO3
9.	Demonstrate proper donning and doffing of PPE.	CO3
10.	Simulate collection and transport of biomedical waste.	CO4

Open Educational Resources (OER):

1. https://www.who.int/teams/integrated-health-services/patient-safety
2. https://www.ihi.org/education/IHIOpenSchool
3. https://www.coursera.org/learn/quality-improvement-healthcare
4. https://www.ahrq.gov/patient-safety/index.ht

SEMESTER I					
Course Code BPAH106	**Course Title** Healthcare Informatics and Data Analytics	**L**	**T**	**P**	**C**
Version	2025	2	0	0	2
Category of Course	VAC-I				
Total Contact Hours	30 hrs				
Pre-Requisites/ Co-Requisites	Pre-requisite: Familiarity with basic computer use. Co-requisite: Must be taken alongside theory classes to apply data collection, electronic health record (EHR) usage, and analytics tools for healthcare decision-making.				

Course Perspective :

To integrate technology with healthcare, analyse healthcare data to improve outcomes, enhance decision-making, optimize processes, and facilitate evidence-based practices for better patient care.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Remember the role of informatics in healthcare delivery.
CO 2: Explain proficiency in healthcare information systems and technologies.
CO 3: Apply data collection, storage, and retrieval methods in healthcare settings.
CO 4: Analyze healthcare data and evaluate emerging technologies and ethical issues in healthcare informatics

Course Outline:

Unit number-1	**Title: :** **Introduction to Healthcare Informatics**	**No. of hours- 7**
What is Informatics? , Informatics in Various Industries ,Data, Information, Knowledge, and Wisdom (DIKW Pyramid) , Information Systems: Components, Processes, and Outputs , How Informatics Helps in Decision-Making Key Technologies in Informatics: Databases, Networks, and Software Applications.		
Unit number-2	**Title: :** **Fundamentals of Healthcare Informatics**	**No. of hours- 5**

Healthcare Informatics: Definition and Importance , Key Components of Healthcare Informatics ,Healthcare Workflows Where Informatics Plays a Role , Examples of Informatics Improving Patient Care		
Unit number-3	**Title: Data in Healthcare**	**No. of hours- 7**

Types of Healthcare Data ,Sources of Healthcare Data,Methods of Data Collection Data Accuracy, Privacy, and Security in Healthcare , Healthcare Data Standards: HL7, ICD-10, SNOMED , Challenges in Managing Healthcare Data: Interoperability and Consistency , Challenges in Maintaining Patient Confidentiality During Data Collection and Sharing

Unit number-4	**Title: Basics of Data Analysis for Allied Healthcare**	**No. of hours- 6**
Basics of Data Analysis , Healthcare Data Analysis , Excel: A Simple Tool for Data Analysis , Basic Statistics: Averages and Trends in Healthcare Data , Analysing Patient Appointment Trends: A Practical Use Case , Monitoring Inventory of Medical Supplies: A Use Case , Evidence-Based Practice in Healthcare , Ethical Concerns in Predictive Analytics in Patient Care		
Unit number-5	**Title: Emerging Trends and Technologies**	**No. of hours- 5**
Artificial Intelligence (AI) in Healthcare Telemedicine and Remote Patient Monitoring Wearable Health Devices Real-World Applications of Emerging Technologies Growth of Mobile Health Apps Challenges of Adopting New Technologies Ethical Considerations in the Use of Advanced Technologies Future Directions in Healthcare Informatics		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1.**Essentials of Health Information Systems and Technology**, by **Jean A. Balgrosky**, **4th** Edition **2023**, published by **Jones & Bartlett Learning**

Suggested Readings:

1**. Biomedical Informatics: Computer Applications in Health Care and Biomedicine**, by Edward H. Shortliffe, James J. Cimino, 5th Edition 2021, published by Springer Nature (Springer, Cham / Springer London)

2. **Data Science for Healthcare: Methodologies and Applications**, by Sergio Consoli, Diego Reforgiato Recupero, 1st Edition 2019, published by Springer Nature, Cham, Switzerland

Open Educational Resources (OER):

1. https://oercommons.org/browse?f.keyword=health-informatics
2. https://library.fiu.edu/healthinformatics
3. https://www.aacu.org/oer/research/open-educational-resources-oers-in-health-informati

SEMESTER-II

SEMESTER II					
Course Code BPAH201	**Course Title** Human Anatomy & Physiology - II	**L**	**T**	**P**	**C**
Version	2025	3	1	0	4
Category of Course	Major-III				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	Pre-requisite: Completed Human Anatomy and Physiology-I Co-requisite: Must be taken alongside theory classes to perform dissections, physiological experiments, and anatomical observations that reinforce theoretical knowledge.				

Course Perspective :

To understand anatomical terms, organization of human body and structure of cell, tissue, membranes and glands, structure and functions of bones and joints, functions of systems in body. Have knowledge about Applied Anatomy, understanding blood cell count, coagulation, grouping, Hb; BP and Pulse monitoring

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand the functions of special senses and endocrine glands, and related disorders.

CO 2: Explain the structure and functions of the cardiovascular system, and its common circulatory disorders.
CO 3: Apply the lymphatic, respiratory, and digestive systems, and assess their roles in health and disease.
CO 4: Determine metabolic, urinary, and reproductive processes, and understand

related nutritional and genetic disorders.

Course Outline:

Unit number-1	**Title: Special Senses & Endocrine System**	**No. of hours-10**
The Special Senses: Eye and vision, ear and hearing, taste and smell, touch and proprioception The Endocrine System: Glands and hormones, hormone action and regulation, endocrine disorders		
Unit number-2	**Title**: **Cardiovascular System**	**No. of hours-10**
Blood: Components, functions, and disorders Heart: Anatomy, cardiac cycle, electrical activity, cardiac output, disorders Blood Vessels and Hemodynamics: Types, blood flow, pressure regulation, vascular disorders		
Unit number-3	**Title: Lymphatic, Respiratory & Digestive Systems**	**No. of hours-9**
Lymphatic System and Immunity: Vessels, nodes, immune components, responses, disorders Respiratory System: Anatomy, gas exchange, pulmonary function, respiratory disorders Digestive System: Anatomy, digestion, enzymes, digestive disorders		
Unit number-4	**Title: Metabolism, Nutrition & Urinary System**	**No. of hours-8**
Metabolism and Nutrition: Metabolic processes, energy metabolism, nutrients, metabolic disorders Urinary System: Kidney structure/function, urine formation, fluid balance, urinary disorders		
Unit number-5	**Title: Reproductive Systems & Development**	**No. of hours-8**
Reproductive Systems: Male/female anatomy, hormones, processes, disorders Development and Inheritance: Human development stages, genetics, developmental disorders		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. William Davis (P) understanding Human Anatomy and Physiology – McGraw

Hill **Suggested Readings:**

1.Chaursia- A Text Book of Anatomy

2.Guyton (Arthur) Text Book of Physiology. Latest Ed. Prism Publishers 3.Choudhari (Sujith K) Concise Medical Physiology Latest Ed. New Central Book **Open Educational Resources (OER):**

1.OpenStax Anatomy & Physiology
https://openstax.org/details/books/anatomy-and-physiology

2.Khan Academy – Human Anatomy & Physiology
https://www.khanacademy.org/science/health-and-medicine/human-anatomy-and-physiology

3.Visible Body (3D Models & Demos)
https://www.visiblebody.com/

4.MERLOT – Anatomy & Physiology Resources
https://www.merlot.org/merlot/anatomyphysiology.htm

Practical

SEMESTER II				
Course Code BPAH251	**Course Title** Human Anatomy & Physiology – II	**L T**	**P**	**C**
Version	2025	0 0	2	1
Category of Course	Major-III Practical's			
Total Contact Hours	30 hrs			
Pre-Requisites/Co-Requisi tes	Pre-requisite: Completed Human Anatomy and Physiology-I Co-requisite: Should be taken alongside practical sessions to understand the structural and functional aspects of body systems through hands-on learning.			

Course Perspective :

This course builds a foundational understanding of human anatomy and physiology essential for careers in healthcare. It equips learners with core knowledge of body systems, structures, and functions, enabling clinical reasoning and practical application in diagnostics, patient care, and laboratory practices. The course enhances academic growth, supports professional readiness, and bridges theory with real-world healthcare scenarios.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand major human organs using anatomical models and posters.

CO2:Demonstrate the structure of the circulatory and respiratory systems through 46

model-based demonstrations

CO 3:Observe the digestive and excretory systems using anatomical models.

CO4: Recognize key sensory and reproductive structures using models.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1.	Demonstration of Major organs through models and posters.	CO1
2.	Demonstration of parts of the circulatory system from models.	CO2
3.	Demonstration of parts of the respiratory system from models.	CO2
4.	Visualize the digestive system through posters and models.	CO3
5.	Observe an excretory system through anatomical models and posters.	CO3
6.	Structure of eye and ear	CO4
7.	Demonstration of various parts of male & female reproductive system from models	CO4

Open Educational Resources (OER):

1.OpenStax Anatomy & Physiology
https://openstax.org/details/books/anatomy-and-physiology

2.Khan Academy – Human Anatomy & Physiology
https://www.khanacademy.org/science/health-and-medicine/human-anatomy-and-physiology

3.Visible Body (3D Models & Demos)
https://www.visiblebody.com/

4.MERLOT – Anatomy & Physiology Resources
https://www.merlot.org/merlot/anatomyphysiology.h

SEMESTER II					
Course Code BPRT202	**Course Title** Respiratory Therapy - Basic	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**

Category of Course	Major-IV
Total Contact Hours	45 hrs
Pre-Requisites/ Co-Requisites	Pre-requisite**:** A basic understanding of human anatomy and physiology, medical terminology, and fundamental physics and chemistry is essential for grasping the principles of Respiratory Therapy. Co-requisite**:** Concurrent study of advanced physiology, patient care and safety, and basic microbiology supports the practical and clinical application of respiratory care concepts.

Course Perspective:

This course introduces students to the foundational principles, equipment, and procedures involved in respiratory care, emphasising the role of respiratory therapists in supporting patients with acute and chronic respiratory conditions. Through theoretical instruction and practical exposure, students will gain the knowledge and skills necessary to understand respiratory physiology, operate basic respiratory equipment, and deliver safe, evidence-based care under clinical supervision.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Remember key anatomical structures and physiological functions of the respiratory system.

CO2 : Understand the basic principles of respiratory care and common respiratory conditions.

CO3: Demonstrate the correct use of basic Respiratory Therapy equipment in simulated settings.

CO4: Analyse patient data to identify respiratory distress and evaluate intervention effectiveness while following safety and infection control protocols.

Course Outline:

Unit number-1	**Title : Oxygen therapy, Humidity and Aerosol therapy**	**No. of hours- 9**

Oxygen therapy: Rationale for oxygen therapy, precautions, assessment of need and adequacy of therapy and the relevant devices, Definition, types, devices, goals, Indications and contraindications, Hazards and complications, Use and principles of oxygen delivery devices, Selection of device, precautions and monitoring of patient **Humidity and Aerosol therapy-**Definition, types, devices, goals, indications, contraindications, hazards, complications, use, principles of humidifiers, aerosol therapy devices, small volume nebulization therapy with physiological rationale, selection of device, precautions, and monitoring of patients		
Unit number-2	**Title**: **Chest X-ray and Pulmonary Function Testing**	**No. of hours- 9**
Chest X-rays: Introduction, value, limitations, radiological views. Pulmonary Function Testing: Types, principles, indications, contraindications, procedure, complications Spirometry: Patterns, significance, bronchodilator response, Broncho-provocative Tests. DLCO. Lung Volume Estimation: Body plethysmography**.** ECG: Basic principles, normal ECG, interpretation in disease.		
Unit number-3	**Title: Respiratory Failure and Blood Gas Analysis**	**No. of hours- 9**
Respiratory Failure: Definition, types/classification, mechanism, causes, clinical features, complications, effects of hypoxia and hypercapnia on other systems, assessment, and management , **Arterial Blood Gas Analysis:** Indications, contraindications, sampling of arterial blood, complications, transport, and interpretation.		
Unit number-4	**Title: Basics of Respiratory Disorders - Part 1**	**No. of hours- 9**
Respiratory Diseases: Classification/types, airway diseases, parenchymal/interstitial diseases, respiratory infections, and a brief mention of common respiratory diseases , **Airway Diseases:** Asthma, chronic obstructive pulmonary diseases (COPD), chronic bronchitis, emphysema , **Respiratory Infections:** Upper respiratory infections, pneumonia (community-acquired, hospital-acquired, ventilator-associated, healthcare-associated), atypical pneumonia, viral pneumonia, fungal pneumonia, and pulmonary tuberculosis.		
Unit number-5	**Title: Basics of Respiratory Disorders - Part 2**	**No. of hours- 9**

Suppurative Lung Diseases: Lung abscess, bronchiectasis, empyema thoracis. Pleural Diseases: Pleural effusion, pneumothorax, haemothorax. Diseases of the Mediastinum and Chest Wall, Lung Cancer, Sleep-Related Breathing Disorders

Learning Experience:

Students will practice oxygen, humidity, and aerosol therapy using clinical devices, interpret chest X-rays, ECGs, and PFT reports, and analyze respiratory case scenarios. They will also engage in simulations for emergencies and ABG interpretation, supported by interactive lectures on respiratory anatomy, pathology, and diagnostics.

Textbooks:

1. Egan's Fundamentals of Respiratory Care – Robert L. Wilkins et al.

Suggested Readings:

1. Essentials of Cardiopulmonary Physical Therapy – Ellen Hillegass
2. Respiratory Physiology – John B. West
3. and David H. Collins

Open Educational Resources (OER):

1. NPTEL (National Programme on Technology Enhanced Learning – India) - https://nptel.ac.in/ 2. OpenStax – Anatomy and Physiology - https://openstax.org/books/anatomy-and-physiology/pages/1-introduction
3. LibreTexts – Respiratory System - https://med.libretexts.org/Bookshelves/Anatomy_and_Physiology/Book%3A_Anatomy_and_Physiolo gy_(Boundless)/22%3A_Respiratory_System

SEMESTER II					
Course Code BPAH203	**Course Title** Microbiology	**L**	**T**	**P**	**C**
Version	2025	3	0	0	3
Category of Course	Minor-II				
Total Contact Hours	45 hrs				
Pre-Requisites/Co-Requisi tes	Pre-requisite: Basic knowledge of high school-level biology. Co-requisite: Must be taken alongside theory classes to perform microbial staining, culture techniques, and antimicrobial sensitivity testing for hands-on learning.				

Course Perspective :

This course covers microbiology fundamentals, microscopy techniques, and sterilization methods, emphasizing essential skills for healthcare settings. Additionally, it provides knowledge in immunology, infection control, and biomedical waste management, ensuring comprehensive understanding and practical application.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand the basics of microbiology, including its history, classification, nomenclature, and taxonomy.

CO 2: Explain about different types of microscopes and their uses in laboratories.

CO 3: Apply skills in sterilization and disinfection using physical and chemical methods.

CO 4: Evaluate proficiency in using culture media and bacterial isolation techniques under aerobic and anaerobic conditions.

Course Outline:

Unit number-1	**Title: General Microbiology**	**No. of hours-10**
History, classification, nomenclature, and taxonomy of microbes, types of microscopes, sterilization and disinfection methods, culture media and techniques for isolating pure cultures.		
Unit number-2	**Title: Immunology**	**No. of hours-9**

Innate and acquired immunity, antigens and antibodies, hypersensitivity types, autoimmunity mechanisms and classification of autoimmune diseases.		
Unit number-3	**Title: Infection Control**	**No. of hours-9**
Types and transmission of healthcare-associated infections, infection control methods, sources, classification, and types of infectious diseases.		
Unit number-4	**Title: Biomedical Waste Management**	**No. of hours-7**
Types and principles of biomedical waste, sterilization equipment, chemicals for disinfection, and safe waste handling in healthcare.		
Unit number-5	**Title: Virology**	**No. of hours-10**
General properties of viruses, diseases and prevention of hepatitis, HIV, rabies, and poliomyelitis.		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. Prescott's Microbiology – Joanne Willey, Kathleen Sandman, Dorothy Wood

Suggested Readings:

1. Jawetz, Melnick & Adelberg's Medical Microbiology – Geo. F. Brooks, Karen C. Carroll, Janet S. Butel, Stephen A. Morse
2. Medical Microbiology – Patrick R. Murray, Ken S. Rosenthal, Michael A. Pfaller
3. Textbook of Microbiology – C.P. Baveja (Indian Author)
4. Essentials of Medical Microbiology – Apurba S. Sastry (Indian Author) 5. Textbook of Microbiology for Medical Students – Subhash Chandra Parija (Indian Author)

Open Educational Resources (OER):

1. https://openstax.org/books/microbiology/pages/1-introduction
2. https://bio.libretexts.org/Bookshelves/Microbiology
3. https://learn.saylor.org/course/view.php?id=80
4. https://www.train.org/cdctrain/
5. https://ocw.mit.edu/courses/biology/7-00sc-fundamentals-of-biology-fall-2

Practical

SEMESTER II					
Course Code BPAH253	**Course Title** Microbiology	**L**	**T**	**P**	**C**
Version	2025	0	0	2	1
Category of Course	Minor-II Practical's				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisi tes	Pre-requisite: Basic knowledge of high school-level biology. Co-requisite: Should be taken alongside introductory practical/lab sessions to understand microbial structure, function, and pathogenicity through theoretical concepts.lab for hands-on understanding				

Course Perspective :

This course covers microbiology fundamentals, microscopy techniques, and sterilization methods, emphasizing essential skills for healthcare settings. Additionally, it provides

knowledge in immunology, infection control, and biomedical waste management, ensuring comprehensive understanding and practical application.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Demonstrate proper handling, use, and maintenance of basic microbiology laboratory equipment including microscopes, incubators, and autoclaves.

CO 2: Perform standard microbiological techniques such as staining, culture media preparation, inoculation, and isolation of pure cultures.

CO 3: Observe common microorganisms using microscopic observation, culture characteristics, and biochemical testing.
CO4 Adapt and Apply aseptic techniques, disinfection, and sterilization methods to ensure biosafety and infection control in laboratory and clinical settings

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1.	Demonstration of Microscope and its parts	CO1
2.	Demonstration of glassware used in microbiology.	CO1
3.	Demonstration of autoclave and sterilization of glass wares.	CO1
4.	Demonstration of Hot air oven and sterilization of glass wares.	CO1

5.	To perform Gram staining	CO2
6.	To perform Acid fast staining (Zeihl Neelsen staining)	CO2
7.	To perform Indian ink staining	CO2
8.	To perform Hanging drop method	CO3
9.	To demonstrate agglutination reactions.	CO3
10.	To perform Rheumatoid Arthritis and WIDAL test	CO4
11.	To perform a Rapid Plasma Reagent test.	CO4
12.	To perform a C-Reactive Protein test.	CO4

Open Educational Resources (OER):

1. https://openstax.org/books/microbiology/pages/1-introduction
2. https://bio.libretexts.org/Bookshelves/Microbiology
3. https://learn.saylor.org/course/view.php?id=80

4.https://www.train.org/cdctrain/

5.https://ocw.mit.edu/courses/biology/7-00sc-fundamentals-of-biology-fall-2011

SEMESTER II					
Course Code BPAH204	**Course Title** Fundamentals Computer	**L**	**T**	**P**	**C**
Version	2025	2	0	0	2
Category of Course	MDP-I				
Total Contact Hours	30				
Pre-Requisites/ Co-Requisites	Pre-requisite: Basic knowledge of Computer at 10+2 level. Co-requisite: May be taken alongside introductory courses in health informatics or digital documentation for applied computer usage in healthcare settings.				

Course Perspective :

To provide foundational knowledge and skills in computer science, including understanding hardware and software, programming principles, algorithms, data structures, and problem-solving techniques.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand basic computing concepts and terminology.

CO 2: Explain to navigate and use operating systems effectively

CO 3: Apply introductory programming skills.

CO 4: Examine problem-solving abilities.

Course Outline:

Unit number-1	**Title: Basics of Computers**	**No. of hours-6**
Computer introduction, features, generations, block diagram, computer languages, input devices, output devices.		

Unit number-2	Title: Processor, Memory, and Storage	No. of hours-5
CPU, RAM, ROM, magnetic storage, optical disks, operating system basics, MS-DOS, DOS commands.		
Unit number-3	**Title: MS Word in Practice**	**No. of hours-7**
MS Word interface, file handling, text editing, formatting, tables, mail merge, printing.		
Unit number-4	**Title: Excel and PowerPoint**	**No. of hours-7**
Excel basics, worksheet, data entry, formatting, graphs, PowerPoint creation, slide formatting, transitions.		
Unit number-5 **Title: Windows and Networking**		**No. of hours-5**
Windows OS, desktop, taskbar, folder operations, window management, networks, topologies, internet, browsers, applications.		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. "Computer Science: An Overview" by J. Glenn Brookshear and Dennis Brylow

Suggested Readings:

1. "Introduction to Computing Systems: From Bits and Gates to C and Beyond" by Yale N. Patt and Sanjay J. Patel
2. "Computer Networking: A Top-Down Approach" by James Kurose and Keith Ross
3. Starting Out with C++: From Control Structures through Objects" by Tony Gaddis

Open Educational Resources (OER):

1.CS50 by Harvard (Introduction to Computer Science)
https://cs50.harvard.edu

2.MIT OpenCourseWare – Introduction to Computer Science
https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-0001-introduction-to-computer-science-and-programming-in-python-fall-2016/

3.Khan Academy – Computer Science & Computing Basics
https://www.khanacademy.org/computing

4.Saylor Academy – Introduction to Computer Science
https://learn.saylor.org/course/view.php?id=56

Practical

SEMESTER II					
Course Code BPAH254	**Course Title** **Fundamental Computers**	**L**	**T**	**P**	**C**
Version	2025	0	0	2	1
Category of Course	MDP-I Practical's				
Total Contact Hours	30 Hrs				
Pre-Requisites/Co-Requisites	Pre-requisite: Basic knowledge of Computer at 10+2 level Co-requisite: May be taken alongside introductory courses in health informatics or digital documentation for applied computer usage in healthcare settings.				

Course Perspective :

This course builds a foundational understanding of human anatomy and physiology essential for careers in healthcare. It equips learners with core knowledge of body systems, structures, and functions, enabling clinical reasoning and practical application in diagnostics, patient care, and laboratory practices. The course enhances academic growth, supports professional readiness, and bridges theory with real-world healthcare scenarios

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Demonstrate basic operating system and internet skills including DOS commands, email creation, and web browsing.

CO 2: Observe and create and format professional documents using MS Word and apply tools like autocorrect, tables, and object insertion.

CO 3: Perform and use of spreadsheets for data handling, including formula application, formatting, and graph creation.

CO4: Adapt design engaging presentations and manage basic databases using MS PowerPoint and MS Access.

Practical Outline:

S.No Lab Task	**Mapped CO/COs**
1. Demonstrate the basic DOS commands.	CO1
2. Creating an email account	CO1

3. Using a web browser for searching and surfing.	CO1
4. Creating and formatting a document in MS office	CO2
5. Using autocorrect, auto text and spell check operation in MS office.	CO2
6. Create tables in MS Word.	CO2
7. Inserting different kinds of object in MS word.	CO2
8. Create an Excel work sheet with the following options: rows and columns alignment.	CO3
9. Using excel formulas.	CO3
10. Create a graph with available data in MS Excel.	CO3
11. Using transition and setting timings for slide shows.	CO4
12. Use MS access to create databases and tables.	CO4

Open Educational Resources (OER):

1.CS50 by Harvard (Introduction to Computer Science)
https://cs50.harvard.edu

2.MIT OpenCourseWare – Introduction to Computer Science
https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-0001-introduction-to-computer-science-and-programming-in-python-fall-2016/

3.Khan Academy – Computer Science & Computing Basics
https://www.khanacademy.org/computing

4.Saylor Academy – Introduction to Computer Science
https://learn.saylor.org/course/view.php?id=56

SEMESTER II					
Course Code BPAH205	**Course Title** Professional Communication and Soft Skills in Healthcare II	**L**	**T**	**P**	**C**
Version	2025	2	0	0	2
Category of Course	AEC-II				
Total Contact Hours	30				
Pre-Requisites/ Co-Requisites	**Pre-requisite:** Basic knowledge of English and Communication Skills **Co-requisite:** Must be taken alongside theory classes to practice real-life scenarios, role-plays, and exercises enhancing communication and teamwork skills.				

Course Perspective :

The course aims to develop effective communication skills among healthcare professionals to enhance patient care, interdisciplinary collaboration, and professional relationships. By the end of the course, students should be able to understand the importance of communication in healthcare settings, demonstrate empathy and active listening, communicate clearly and respectfully with patients and colleagues, and resolve conflicts constructively.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Remember and Recall effective communication skills for handling difficult conversations, delivering bad news, and resolving conflicts in a healthcare setting.

CO 2: Explain professional etiquette, cultural sensitivity, and empathy to build positive rapport with patients and their families.

CO 3: Apply effectively within healthcare teams by understanding team dynamics, roles, and managing group interactions.

CO4: Evaluate critical thinking, emotional intelligence, and self-management strategies to handle stress, prioritize tasks, and make informed decisions in clinical environments.

Course Outline:

Unit number-1	**Title: Foundational Communication Skills**	**No. of hours-9**
What is a Question?, Practice Time, The Power of Written Communication in the Medical Field, Communication Styles		

Unit number-2	Title: Handling Complex Interactions in Healthcare	No. of hours-9
Communication: Handling Difficult Conversations, Conclusion, Practice Time		
Unit number-3	**Title: Professionalism and Social Etiquette in Healthcare**	**No. of hours-9**
General Etiquette and Mannerisms, Section 01: Courtesy, Section 02: Manners & Etiquette, Social Media Conduct, Section 03: Etiquette of Workplace Friendships		
Unit number-4	**Title: Empathy and Bedside Manner in Patient Care**	**No. of hours-9**
Treat Patients Like People, Not Cases, Demonstrating Bedside Manners, Empathy: Walk a Mile in Their Shoes, The Paradox of Patient Care: Clinical Excellence vs. Patient Experience, Resolving the Paradox, Empathy vs. Sympathy,Practice Time		

Unit number-5	Title: Personal Development and Teamwork	No. of hours-9
Building Values,Teamwork: Collaboration, Time Management, Problem Solving & Decision Making, Mental Health: Cultivating Resilience and Growth, Enhance Emotional Intelligence, Frustration: A Common Human Emotion.		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. Health Communication: Strategies for Healthcare Professionals – Michael P. Pagano

Suggested Readings:

1. Communication Skills for the Healthcare Professional – Laurie Kelly McCorry, Jeff Mason
2. Effective Communication for Health Professionals – Elsevier
3. Skills for Communicating with Patients – Jonathan Silverman, Suzanne Kurtz, Juliet Draper
4. Interpersonal Communication in Nursing – Shirley Bach, Peter Grant

Open Educational Resources (OER):

1. MedEdPORTAL (AAMC) – Free peer-reviewed teaching modules on healthcare communication.

2.FutureLearn – Interpersonal Skills at Work – Free course on professional communication in healthcare and workplace.

3.OpenWHO – Communicating with Patients about Vaccination – WHO course on patient-centered communication.

4.Canvas Network – Healthcare Communication Courses – Search for archived healthcare communication courses.

SEMESTER II					
Course Code BPAH206	**Course Title** Self Awareness	**L**	**T**	**P**	**C**
Version	2025	2	0	0	2
Category of Course	Value Added Course-II VAC II				
Total Contact Hours	30 hrs				
Pre-Requisites/ Co-Requisites	Pre-requisite: Basic understanding of personal development concepts, effective communication skills, Co-requisite: Must be taken alongside theory classes to engage in reflective exercises, mindfulness practices, and activities promoting self-assessment and development.				

Course Perspective :

This course helps learners understand their emotions, thoughts, strengths, and values to build

a strong personal identity. It fosters emotional intelligence, self-reflection, and confidence. By enhancing self-awareness, students are better equipped to make informed decisions and develop healthy interpersonal relationships.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Remember and articulate their personal strengths, weaknesses, values, and beliefs through self-reflection and assessment tools.

CO 2: Understand improved emotional intelligence, including self-regulation, empathy, and interpersonal communication skills.

CO 3: Apply goal-setting strategies and motivational techniques to enhance personal and

professional development.

CO 4: Evaluate mindfulness and self-care techniques to manage stress and maintain mental well-being in daily life.

Course Outline:

Unit number-1	**Title: Introduction to Self-Awareness**	**No. of hours- 6**
Meaning and importance of self-awareness, Johari Window model, Types of self-awareness (internal vs external), Self-concept, self-image, self-esteem, Reflection exercises and self-assessment tools.		

Unit number-2	**Title: Personality and Emotional Intelligence**	**No. of hours- 7**
Understanding personality types (MBTI, Big Five, etc.), Emotional intelligence: definition and domains (Daniel Goleman's model), Managing emotions and stress, Developing empathy and self-regulation, Case studies and role plays		
Unit number-3	**Title**: **Values, Beliefs, and Attitudes**	**No. of hours- 5**
Core values and how they shape behaviour, Understanding beliefs, biases, and assumptions, Value clarification techniques, Attitude formation and change, Group activities and personal reflection		
Unit number-4	**Title**:**Self-Motivation and Goal Setting**	**No. of hours- 5**
Concept of intrinsic vs extrinsic motivation, SMART goal setting, Building resilience and a growth mindset, Time management and overcoming procrastination, Creating a personal development plan		
Unit number-5	**Title: Mindfulness and Self-Care Practices**	**No. of hours- 7**
Mindfulness: concepts and practices, Techniques for managing anxiety and building focus, Importance of physical, emotional, and mental self-care, Work-life balance in healthcare professions, Guided meditation and journaling practices		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along

with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. **McGraw, P. (2001).** Self Matters: Creating Your Life from the Inside Out. Simon and Schuster.

Suggested Readings:

1. **Brown, B. (2012).** Daring Greatly: How the Courage to Be Vulnerable Transforms the Way We Live. Penguin.
2. **Goleman, D. (1995).** Emotional Intelligence: Why It Can Matter More Than IQ. Bantam Books.
3. **Robbins, T. (2001).** Awaken the Giant Within. Free Press.
4. **Tolle, E. (2004).** The Power of Now: A Guide to Spiritual Enlightenment. New World Library.

Open Educational Resources (OER):

1. MIT OpenCourseWare – Self-Awareness and Personal Development https://ocw.mit.edu – Search for courses under psychology or leadership development.
2. Coursera – Foundations of Mindfulness (Free Auditing Available) https://www.coursera.org
3. edX – The Science of Happiness (UC Berkeley) https://www.edx.org/course/the-science-of-happiness
4. MindTools – Emotional Intelligence Toolkit https://www.mindtools.com

SEMESTER III

SEMESTER III				
Course Code BPRT301	**Course Title** Respiratory Disorders	**L T**	**P**	**C**
Version	2025	**3 1**	**0**	**4**
Category of Course	Major-V			
Total Contact Hours	45 hrs			
Pre-Requisites/ Co-Requisites	Pre-requisite: Basic knowledge of human anatomy, physiology, and pathology as covered in the first and second semesters. Co-requisite : Must be taken alongside clinical posting/lab sessions and courses in pharmacology or diagnostic techniques			

CoursePerspective:

This course provides an in-depth understanding of common and critical respiratory disorders encountered in clinical practice. It focuses on pathophysiology, clinical manifestations, diagnostic procedures, and evidence-based management approaches. The course prepares learners to identify, assess, and assist in managing patients with various respiratory illnesses in acute and chronic care settings.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: **Understand** the causes, symptoms, and management of common cardiac and respiratory diseases.

CO 2: **Explain** key neurological, renal, gastrointestinal, liver, and infectious diseases along with their clinical relevance.

CO 3: **Apply** abnormalities related to blood, fluid, electrolyte, and acid-base balance, including their correction methods.

CO 4: **Evaluate** complex conditions like pulmonary edema, sepsis, MODS, toxicology, and health issues in special populations.

Course Outline:

Unit number-1	**Title: Cardiac and Respiratory Diseases**	**No. of hours-9**
Cardiovascular Diseases: Hypertension, ischemic heart diseases, myocardial infarction, arrhythmias, heart failure, shock (types, causes).Respiratory Diseases: Pneumonia, tuberculosis, chronic obstructive pulmonary disease, asthma, pleural effusion, pneumothorax, interstitial lung disease.		
Unit number-2	**Title : Neurological, Renal , GI & Infectious Diseases**	**No. of hours-8**
Neurological Diseases: Poliomyelitis, Guillain-Barré syndrome, myasthenia gravis, epilepsy/seizure disorders, cerebrovascular accident/stroke, Renal Diseases: Acute kidney injury, chronic kidney disease, Gastrointestinal and Liver Diseases: Gastritis/acute peptic disease, peptic ulcer, acute gastroenteritis, hepatitis, hepatic failure, alcoholic liver disease, Infectious Diseases: Dengue, malaria, leptospirosis.		
Unit number-3	**Title: Blood, fluid, electrolyte and acid base abnormalities**	**No. of hours-8**
Blood Loss and Anemia: Thrombocytopenia , Fluid and Electrolyte Imbalance: Corrective methods , Acid-Base Abnormalities: Corrective methods.		
Unit number-4	**Title: Pulmonary Oedema, Sepsis and MODS**	**No. of hours-12**

Pulmonary Edema, Acute Lung Injury, and Acute Respiratory Distress Syndrome. Sepsis, Multi-Organ Failure, and Multi-Organ Dysfunction Syndrome.		
Unit number-5	**Title: Health problems in Specific conditions and Toxicology**	**No. of hours-8**
Health Problems in Specific Conditions: Pregnancy (antenatal care, disorders in pregnancy), children and newborns, obesity, diabetes mellitus, HIV infections and AIDS, elderly subjects and disability, brief mention of endocrine disorders, Poisoning and Drug Overdosing: Classification of poisons, principles of treatment of poisoning and primary care, poisons and drug overdosing requiring ventilation. Miscellaneous: Drowning, hanging.		

Learning Experience:

The course combines interactive lectures and clinical case discussions to build foundational knowledge and critical thinking. Bedside demonstrations and simulation exercises provide hands-on experience in clinical skills. Workshops on spirometry and ABG interpretation enhance diagnostic proficiency, while group-based analysis of radiological and diagnostic data promotes collaborative learning. Clinical rotations in respiratory wards, where applicable, offer real-world exposure.

Textbooks:

1. West's Respiratory Physiology – John B. West
2. Murray & Nadel's Textbook of Respiratory Medicine
3. Manual of Clinical Problems in Pulmonary Medicine – Richard A. Bordow

Suggested Readings:

1. Fishman's Pulmonary Diseases and Disorders – Alfred Fishman
2. Essentials of Pulmonary and Critical Care Medicine – Mosenifar
3. Indian Guidelines for Asthma, COPD, and Tuberculosis

Open Educational Resources (OER):

1. WHO Tuberculosis Learning Resources – https://www.who.int
2. American Thoracic Society – Patient and Student Education [https://www.thoracic.org]
3. Open Respiratory Medicine Journal – [https://openrespiratorymedicinejournal.com/]
4. MedEdPORTAL – Respiratory Case Simulations

Practical

SEMESTER III					
Course Code BPRT351	**Course Title** Respiratory Disorders	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**

Category of Course	Major V – Practical's
Total Contact Hours	30 hrs
Pre-Requisites/Co-Requisi tes	Pre-requisite: Basic knowledge of human anatomy, physiology, and pathology as covered in the first and second semesters. Co-requisite : Must be taken alongside clinical posting/lab sessions and courses in pharmacology or diagnostic techniques

Course Perspective:

This course provides an in-depth understanding of common and critical respiratory disorders encountered in clinical practice. It focuses on pathophysiology, clinical manifestations, diagnostic procedures, and evidence-based management approaches. The course prepares learners to identify, assess, and assist in managing patients with various respiratory illnesses in acute and chronic care settings.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Demonstrate vital sign monitoring and system-based physical assessment techniques, including cardiovascular and respiratory evaluations.
CO2: Observe and interpret ABG and electrolyte data for patient evaluation.
CO3: Practice case-based reasoning to manage common respiratory conditions.
CO4: Adapt respiratory care needs across special populations through antenatal, pediatric, and geriatric case simulations.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1.	Vital signs monitoring and cardiovascular system assessment	CO1
2.	Lung auscultation and interpretation of respiratory sounds	CO1.CO3
3.	Case study: COPD and asthma management	CO1,CO3
4.	ABG analysis and acid-base interpretation	CO2
5.	Electrolyte imbalance correction planning	CO2
6.	Sepsis and ARDS: Simulated case-based respiratory interventions	CO3
7.	Antenatal respiratory monitoring: Pregnancy case simulation	CO4
8.	Pediatric and geriatric case simulation with comorbidities	CO4

Open Educational Resources (OER):

1.MedlinePlus - https://medlineplus.gov

2.National Heart, Lung, and Blood Institute (NHLBI)-https://www.nhlbi.nih.gov

3.OpenStax – Anatomy and Physiology

https://openstax.org/books/anatomy-and-physiology/pages/1-introduction

4.Nursing Skills – Osmosis -

https://www.osmosis.org/learn/Nursing_Skills

SEMESTER III					
Course Code BPRT302	**Course Title** Applied Pharmacology	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-VI				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites-** Students must have knowledge about respiratory disorder and microbiology **Co-Requisites -** Hands-on workshops will provide practical training in drug preparation, dosage calculations, and various				

	administration routes including emergency drug protocols.

Course Perspective:

This course provides an in-depth understanding of pharmacological agents and clinical medical conditions relevant to respiratory care. It focuses on drug mechanisms, therapeutic uses, and pathophysiology of diseases requiring pharmacological interventions, especially within cardiopulmonary and critical care settings. Students will develop the knowledge and clinical insight necessary for safe, evidence-based Respiratory Therapy.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1:Understand the pharmacodynamics and pharmacokinetics of drugs used in cardiopulmonary and critical care.
CO2: Explain major classes of drugs and their roles in the treatment of respiratory and systemic diseases.
CO3: Apply clinical reasoning to manage patients requiring pharmacological interventions. **CO4: Evaluate** pharmacological knowledge with pathophysiological understanding for effective patient care planning.

Course Outline:

Unit number-1	**Title - Fundamentals of Pharmacology and Autonomic-Cardiovas cula r Drugs**	**No. of hours-10**
ANS drugs, antihypertensives, cardiac drugs, anticoagulants, cardioplegia, shock management.		
Unit number-2	**Title**: **Anaesthetics, Analgesics, and CNS Drugs**	**No. of hours-10**
Anaesthetics, analgesics, sedatives, CNS drugs, antihistamines, CPB protection.		
Unit number-3	**Title: Respiratory Pharmacology and Emergency Drugs**	**No. of hours-10**
Bronchodilators, mucolytics, corticosteroids, diuretics, inhalational agents, emergency drugs.		
Unit number-4	**Title: Antimicrobials and Miscellaneous Therapeutics**	**No. of hours-8**
Antimicrobials, TB drugs, IV fluids, electrolytes, immunosuppressants, perfusion		

drugs.		
Unit number-5	**Title: Medical Disorders Relevant to Respiratory Care**	**No. of hours-7**
Systemic diseases, respiratory disorders, infections, pediatrics, occupational lung disease, embolism.		

Learning Experience:

This course combines interactive lectures with case-based discussions to promote critical thinking and clinical relevance. Visual and comparative learning tools are used to enhance understanding of complex concepts. Hands-on demonstrations and workshops provide practical experience, while problem-based and integrated learning encourages application of knowledge across scenarios. Formative assessments and reflective activities support continuous learning and self-improvement.

Textbooks:

1. K.D. Tripathi – *Essentials of Medical Pharmacology*

Suggested Readings:

1. Rang & Dale – *Pharmacology*
2. Davidson's Principles and Practice of Medicine
3. John B. West – *Respiratory Physiology: The Essentials*

Open Educational Resources (OER):

1. Khan Academy Pharmacology: https://www.khanacademy.org
2. Coursera (Pharmacology & Respiratory Medicine): https://www.coursera.org
3. NPTEL Online Courses: https://nptel.ac.in
4. PubMed Central (for free access to medical journals): https://www.ncbi.nlm.nih.gov/pmc/

Practical

SEMESTER III					
Course Code BPRT352	**Course Title** Applied Pharmacology	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major VI – Practical's				
Total Contact Hours	30 HRS				
Pre-Requisites/Co-Requisites	**Pre-Requisites-** Students must have knowledge about respiratory disorder and microbiology				

	Co-Requisites - Hands-on workshops will provide practical training in drug preparation, dosage calculations, and various administration routes including emergency drug protocols.

Course Perspective:

This course is designed to provide Respiratory Therapy students with a comprehensive understanding of pharmacological principles and medical conditions relevant to clinical practice. It emphasizes the safe and effective use of medications, their physiological effects, and their application in managing respiratory and systemic conditions.

Course Outcomes:

Upon completion of the course the learner will be able to:
CO1: **Understand** the drug classifications, mechanisms of action, adverse reactions and therapeutic uses relevant to respiratory care.

CO2: **Practice** on dosage calculation, drug preparation, and routes of administration in simulated and clinical settings.

CO3: **Observe** and Interpret prescriptions and simulate emergency drug use in clinical scenarios.

CO4: **Adapt** and analyze case studies to understand pharmacological interventions and antimicrobial resistance.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1.	Identification and classification of common drugs used in respiratory care	CO1
2.	Demonstration of drug dosage calculation techniques	CO3
3.	Practice of IV and inhalational drug administration methods	CO3
4.	Interpretation of prescriptions and medication labels	CO2,CO3
5.	Simulation of drug administration in asthma and COPD emergencies	CO2,CO4
6.	Analysis of case studies involving cardiovascular pharmacology	CO1,CO4
7.	Demonstration of cardioplegia and drugs used in perfusion technology	CO1,CO2
8.	Emergency drug tray setup and simulation	CO3,CO4
9.	Observation of drug-induced side effects and adverse reactions	CO2
10.	Case-based discussion on antimicrobial therapy and resistance	CO2,CO4

Open Educational Resources (OER):

1. National Library of Medicine Drug Portal – https://druginfo.nlm.nih.gov

2. Khan Academy: Pharmacology Modules – https://www.khanacademy.org/science/health-and-medicine

3. Coursera – Drug Commercialization, Pharmacology, and Mechanism of Action

4. MedCram: Pharmacology Lectures – https://www.medcram.com

5. OpenStax Anatomy & Physiology (Pharmacology Chapters) – https://openstax.org/books/anatomy-and-physiology

SEMESTER III				
Course Code BPRT303	**Course Title** Basic Respiratory Therapeutics & Monitoring	**L**	**T P**	**C**
Version	2025	**3**	**0 0**	**3**
Category of Course	MINOR-III			
Total Contact Hours	45 hrs			
Pre-Requisites/ Co-Requisites	Pre-requisites **:** Students must have a foundational understanding of human anatomy and physiology, basic biochemistry, pathophysiology, medical terminology, and the fundamentals of respiratory care. Co-Requisites **:** Students should simultaneously study pharmacology, clinical microbiology, applied physiology of the respiratory and cardiovascular systems, and emergency and critical care concepts to support clinical learning.			

Course Perspective:

This course provides essential knowledge and practical skills in respiratory care therapies and patient monitoring techniques. It focuses on the principles and application of oxygen therapy, aerosol delivery, humidity therapy, and mechanical ventilation basics. Students will learn to operate respiratory devices safely, interpret physiological monitoring data such as arterial blood gases and pulmonary function tests, and respond to patient needs effectively

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Understand appropriate respiratory devices, therapies, and manual resuscitators in clinical practice, including basic mechanical ventilation.

CO2: Explain respiratory pharmacology, nutritional considerations, and their relevance to respiratory care.

CO3: Analyse comprehensive patient assessments and interpret data using tools such as gas analysis. **CO4: Apply** skills to manage artificial airways, perform emergency procedures and operate manual resuscitators with basic understanding of mechanical ventilation.

Course Outline:

Unit number-1	**Title** : **Patient Assessment and Device Selection**	**No. of hours- 8**
Assessing the Patient for Need of Respiratory Care. Selection of Device, Precautions, and Monitoring of Patient During Respiratory Care: Including oxygen therapy, humidity therapy, aerosol therapy, and chest physical therapy.		
Unit number-2	**Title**: **Drugs and Nutrition in Respiratory Care**	**No. of hours- 7**
Drugs Acting on the Respiratory System and Emergency Drugs: Drugs acting on the airway, antibiotics for lung infections and anti-TB drugs, emergency drugs. Nutrition Assessment and Supplementation.		
Unit number-3	**Title: Patient Monitoring in Respiratory Care**	**No. of hours- 10**
Monitoring of a Patient with Respiratory Disease: Gas analysis and analyzers, transcutaneous oxygen monitors and pulse oximeters, capnography, monitoring response to therapy and progression of disease, multi-parameter monitoring.		
Unit number-4	**Title: Artificial Airway and Emergency airway management**	**No. of hours- 10**
Artificial Airways: Oral and nasal endotracheal tubes, tracheostomy tubes—types, parts, features, sizes, and selection of airway; indications and complications. Airway Management: Procedures (intubation, extubation, and care of artificial airway), tracheostomy and de-cannulation, oxygen therapy, humidity therapy, aerosol therapy, and chest physical therapy in patients with artificial airway. Emergency Airway Management and Basic Life Support (BLS).		
Unit number-5	**Title: Manual resuscitators and ventilation**	**No. of hours- 10**
Manual Resuscitators and Ventilators: Face masks, AMBU, Bains; advantages and disadvantages of manual resuscitators; selection and use of manual resuscitators. Basics of Mechanical Ventilation: Positive and negative pressure ventilation; types of ventilators.		

Learning Experience:

Students will gain hands-on skills and theoretical knowledge in assessing respiratory needs, selecting appropriate devices, and safely administering oxygen, aerosol, and humidity therapies. They will develop competence in drug administration for respiratory conditions and emergencies, while understanding nutritional support. Practical training includes mastering patient monitoring tools like pulse oximetry and capnography to track therapy effectiveness. Learners will practice airway management techniques including intubation and tracheostomy care, and acquire foundational skills in manual resuscitation and mechanical ventilation.

Textbooks:

1. Pulmonary and Critical Care Medicine by Tobin, Murray, and Knudson

Suggested Readings:

1. Critical Care Medicine by Marino

2. Pulmonary Rehabilitation by Celli and MacIntyre:

Open Educational Resources (OER):

1.https://en.seamaty.com/index.php?s=%2Fsys%2F664.html&utm_source=chatgpt.com

2.https://opencriticalcare.org/encyclopedia/overview-of-oxygen-delivery-devices/?utm_source=chatgp t.com

Practical

SEMESTER II				
Course Code BPRT353	**Course Title** Basic Respiratory Therapeutics & Monitoring	**L**	**T P**	**C**
Version	2025	**0**	**0 2**	**1**
Category of Course	Minor-III Practical's			
Total Contact Hours	30 hrs			
Pre-Requisites/Co-Requisites	Pre-requisites **:** Students must have a foundational understanding of human anatomy and physiology, basic biochemistry, pathophysiology, medical terminology, and the fundamentals of respiratory care. Co-Requisites **:** Students should simultaneously study pharmacology, clinical microbiology, applied physiology of the respiratory and cardiovascular systems, and emergency and critical care concepts to support clinical learning.			

Course Perspective:

This course equips students with foundational knowledge and practical skills in selecting and applying respiratory care devices and therapies based on patient assessment. It emphasizes understanding the principles, advantages, and limitations of common respiratory instruments and therapeutic procedures.
Students will learn essential clinical skills including airway management, CPR, and basic invasive procedures to support respiratory function effectively and safely.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Demonstrate patient respiratory needs and apply appropriate therapies using respiratory devices(oxygen, aerosol, humidity, and airway clearance), understanding their principles, benefits, and limitations.

CO2: Observe and learn basic and advanced airway management techniques including CPR, intubation, IV access, thoracocentesis, chest tube insertion, and tracheostomy care.

CO3: Practice competence in emergency airway management,Simulate emergency interventions and respiratory procedures.

CO4: Adapt how to operate and interpret monitoring tools in respiratory care including manual resuscitators and mechanical ventilators, SpO_2, capnography, ABG.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Patient assessment and device selection	CO1
2	Oxygen therapy setup and monitoring	CO1
3	Aerosol and humidity therapy application	CO1
4	Demonstration of airway insertion and intubation	CO2
5	CPR procedure practice	CO2
6	IV access technique	CO2
7	Thoracocentesis and chest tube insertion	CO3
8	Tracheostomy care	CO2
9	Demonstrate suctioning and its Types	CO3
10	Understand and operate manual resuscitators and mechanical ventilators	CO4
11	Simulation of emergency airway management	CO3
12	Monitoring and interpreting SpO_2, capnography, ABG	CO4

Open Educational Resources (OER):

1. OpenStax Respiratory Therapy Texts
2. MedlinePlus Respiratory Care Resources
3. Khan Academy Physiology and Clinical Skills Videos
4. CDC Guidelines on Respiratory Procedures
5. YouTube Channels: Respiratory Therapy Tutorials (e.g., Simple Nursing, RegisteredNurseRN)

SEMESTER III					
Course Code BPAH304	**Course Title** Accounting and finance	**L**	**T**	**P**	**C**
Version	2025	**3**	**0**	**0**	**3**
Category of Course	MDP				
Total Contact Hours	45 Hours				
Pre-Requisites/ Co-Requisites	Pre-requisite: Basic understanding of mathematics and general economics or completion of an introductory economics or business studies course. Co-requisite: Concurrent enrollment in an introductory economics, accounting, or business foundations course is recommended for enhanced understanding.				

Course Perspective :

This course provides an in-depth understanding of financial accounting principles, systems, and reporting standards. It explores concepts from basic accounting to the analysis of financial statements and valuation of financial assets, aiming to prepare students to effectively interpret, analyze, and apply financial information in business and healthcare environments.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Students will understand and apply basic financial accounting principles and systems.
CO2: Students will be able to prepare and interpret key financial statements including income statements, balance sheets, and cash flow statements.
CO3: Students will analyze financial statements using financial ratios and evaluate organizational performance.

Course Outline:

Unit number-1	**Title:** Basics of financial Accounting	**No. of hours-8**

Introduction, significance of financial accounting, scope and prospects, evaluation scheme of the course, understanding business, Why we invest, financial statement users, analyzing financial statements, double entry accounting systems, debits and credits. Accounting rules and procedures, assumptions in financial reporting, GAAP, IFRS, Indian GAAP, Accounting methods, analyzing transactions and accounting process		
Unit number-2	**Title:** Accounting: The Language of Business and recording transactions	**No. of hours-8**
Accounting system: traditional versus modern, Analyzing and journalizing transactions, posting transactions to ledger, accounting rules, Preparing the trail balance, effects of errors; accounting system, some basic accounting concepts, Revenue and expense transactions, depreciation, and prepaid transactions, accumulated depreciation, adjusted vs unadjusted trail balance, financial statements from trial balance, Closing the accounts, capital vs revenue, types of errors, ethics		
Unit number-3	**Title: Measuring Income to Assess Performance**	**No. of hours-8**
Basics of income measurement, operating cycle, concepts related to income, recognition of revenue, the income statement, understanding income statement, cash dividends and retained earnings, Four popular financial ratios with real-world cases. critical thinking problems and real-world cases		
Unit number-4	**Title:** Adjustments, sales and Financial Statements	**No. of hours-13**
Adjustments to the accounts. four types of four types of adjustments (cont), classified balance sheet , Income statement and profitability evaluation ratios Critical thinking problems using financial statements. Recording the sales using contra account and internal controls Measuring of uncollectible accounts Assessing the level of account receivable, Internal control.		
Unit number-5	**Title:** Statement of cash flows	**No. of hours-8**
Overview the cash flow statement, preparing the clash flow statement, types of cash flow activities, inflows and outflows of cash flows Preparation of cash flow statements using direct and indirect methods and its 4importance Cash flow statement and balance sheet, examples of cash flow s4tatements Methods of preparing cash flow statements, accounting rules, th4e importance of cash flow statements		

Learning Experience:

Students engage in interactive activities, real-life case studies, and simulations to apply financial concepts. The course emphasizes practical learning through budgeting exercises, financial planning projects, and decision-making scenarios, fostering confidence in managing personal finances.

Textbooks:

"Principles of Accounting" by Jerry J. Weygandt, Paul D. Kimmel, and Donald E. Kieso

Suggested Readings:

- **Financial Accounting" by Robert Libby, Patricia A. Libby, and Frank Hodge**
- **"Principles of Corporate Finance" by Richard A. Brealey, Stewart C. Myers, and Franklin Allen**
- **Fundamentals of Financial Management" by James C. Van Horne and John M. Wachowicz Jr.**

Open Educational Resources (OER):

1. "Personal Finance" – OpenStax, Rice University
https://openstax.org/books/personal-finance/pages/1-introduction
2. "Introduction to Personal Finance" – Saylor Academy
https://learn.saylor.org/course/view.php?id=65
3. Next Gen Personal Finance (NGPF)
https://www.ngpf.org

SEMESTER III					
Course Code BPAH305	**Course Title** Mental Health & Holistic Well Being	**L**	**T**	**P**	**C**
Version	2025	3	0	0	3
Category of Course	AEC-II				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	Pre-requisite: Foundational knowledge in basic psychology, and principles of public health. Co-requisite: Must be taken alongside theory classes to practice relaxation techniques, counseling skills, and activities promoting emotional and physical well-being				

Course Perspective:

To foster understanding of mental well-being, develop emotional intelligence skills, promote self-awareness, resilience, empathy, and effective interpersonal relationships for personal and

professional growth.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Remember mental health factors and recognize common mental health disorders.
CO 2: Understand self-awareness and emotional regulation to manage personal well-being.
CO 3: Apply emotional intelligence to enhance empathy, communication, and relationships.
CO 4: Promote mental well-being and reduce stigma through mindfulness and self-care practices.

Course Outline:

Unit number-1	**Title: Introduction to Self-Management and Mental Health**	**No. of hours-10**
● Understanding the concept of self-management ● Importance of mental health in healthcare settings ● Introduction to physical care and its impact on mental well-being ● Basics of mental self-care (rest, mindfulness, stress control)		
Unit number-2	**Title: Title: Emotional Self-Care and Mental Resilience**	**No. of hours-7**
● What is emotional self-care? ● Strategies for managing emotions effectively ● Practicing self-compassion and self-awareness ● Techniques to cope with stress and anxiety		
Unit number-3	**Title:Title: Enhancing Emotional Intelligence (Part 1)-Self Awareness and Regulation**	**No. of hours-7**
● Understanding emotional intelligence (EI) ● Becoming aware of your emotional responses ● Techniques for regulating emotions ● Staying calm and composed under pressure		
Unit number-4	**Title: Enhancing Emotional Intelligence (Part 2) – Social Skills & Communication**	**No. of hours-10**
● Developing empathy and active listening skills ● Building strong interpersonal relationships ● Open communication with a confidante or mentor ● The importance of seeking feedback for personal growth		
Unit number-5	**Title: Embracing Change and Managing Frustration**	**No. of hours-11**
● Understanding frustration as a normal human emotion ● Constructive ways to manage and channel frustration ● Embracing change with a positive attitude ● Adapting to evolving healthcare environments and roles		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. Foundations of Mental Health Care – Michelle Morrison-Valfre

Suggested Readings:

1. Kaplan & Sadock's Synopsis of Psychiatry – Benjamin J. Sadock, Virginia A. Sadock, Pedro Ruiz
2. Textbook of Mental Health Nursing – Dr. B.T. Basavanthappa (Indian Author)
3. A Short Textbook of Psychiatry – Niraj Ahuja (Indian Author)
4. Emotional Intelligence: Why It Can Matter More Than IQ – Daniel Goleman

Open Educational Resources (OER):

1.World Health Organization (WHO) Mental Health Resources
https://www.who.int/mental_health

2.Mindfulness-Based Stress Reduction (MBSR) by Palouse
https://palousemindfulness.com

SEMESTER III					
Course Code BPAH306	**Course Title** Preventive and Social Medicine	**L**	**T**	**P**	**C**
Version	2025	2	0	0	2
Category of Course	SEC-II				
Total Contact Hours	30 hrs				
Pre-Requisites/ Co-Requisites	Pre-requisite: foundational knowledge of human biology, health science, and epidemiology to understand the principles of preventive medicine and public health. Co-requisite: Students are advised to study biostatistics, health communication, and medical ethics concurrently to support the evaluation of public health programs and professional conduct.				

Course Perspective :

The course aims to provide students with a comprehensive understanding of the principles

and practices of preventive medicine, public health, and social medicine. By the end of the course, students should be able to identify and assess health risks and determinants, plan and implement preventive interventions, and advocate for policies and programs that promote health and well-being at the individual, community, and population levels.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Remember preventive medicine principles
CO 2: Understand public health issues
CO 3: Assess of public health programs
CO 4: Evaluate ethical principles, professionalism, and critical thinking approaches in addressing public health challenges and proposing strategic solutions.

Course Outline:

Unit number-1	**Title: Principles of Preventive medicine**	**No. of hours-6**
Primary, secondary, and tertiary prevention, Importance of preventive measures in reducing the burden of disease and promoting overall health and well-being		
Unit number-2	**Title: Public Health Issues**	**No. of hours-6**
What are Public Health Issues, Community needs assessments, Social, economic, environmental, and behavioral determinants, Population health outcomes		
Unit number-3	**Title: Public Health Programs**	**No. of hours-6**
Public health interventions and programs, Monitoring and evaluation plans, Health indicators, Evidence-based decision-making in public health practice		
Unit number-4	**Title: Ethical and Professional Conduct**	**No. of hours-6**
Ethical principles and professional standards, Professionalism, integrity, and cultural competence in interactions with individuals, communities, and diverse populations		
Unit number-5	**Title: Critical Thinking and Problem-Solving Skills**	**No. of hours-6**
Challenges and opportunities for improving population health, Innovative solutions and strategies to improve public health problems		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. Park's Textbook of Preventive and Social Medicine – K. Park (Indian Author)

Suggested Readings:

1. Textbook of Community Medicine – Sunder Lal, Adarsh, Pankaj (Indian Authors)
2. Essentials of Community Medicine: A Practical Approach – Rajvir Bhalwar (Indian Author)
3. Short Textbook of Preventive and Social Medicine – GN Prabhakara (Indian Author)

4. Principles and Practice of Community Medicine – Asma Rahim (Indian Author)

Open Educational Resources (OER):

Centers for Disease Control and Prevention (CDC) – Prevention Guidelines
https://www.cdc.gov/prevention

World Health Organization (WHO) – Health Promotion and Disease Prevention
https://www.who.int/health-topics/health-promotion

OpenLearn (The Open University) – Introducing Public Health
https://www.open.edu/openlearn/science-maths-technology/introducing-public-health

Theory

SEMESTER III					
Course Code BPAH307	**Course Title** Managing People and Organizations	**L**	**T**	**P**	**C**
Version	2025	2	0	0	2
Category of Course	VAC-III				
Total Contact Hours	30 Hrs				
Pre-Requisites/ Co-Requisites	Pre-requisite: Basic knowledge of Principles of Management, Organizational Behavior, and Communication Skills.. Co-requisite: Human Resource Management, Business Ethics, or Organizational Communication to enhance understanding of people and processes within organizations.				

Course Perspective :

This course provides foundational knowledge of organizational behaviour, leadership, and human resource practices. It equips learners with skills to effectively manage teams, resolve conflicts, and foster a productive work environment. Emphasis is placed on ethical decision-making, motivation, and communication within diverse organizational settings.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Explain the fundamental concepts of organizational behavior and its relevance to healthcare and allied health systems.

CO 2: Demonstrate an understanding of leadership theories and apply appropriate leadership styles in various organizational situations.

CO 3: Analyse team dynamics and implement effective communication and conflict resolution strategies in a healthcare environment.

CO 4: Evaluate basic human resource management practices including motivation, recruitment, performance management, and staff development in healthcare organizations.

Course Outline:

Unit number-1	Title: Introduction to Organizational Behaviour	No. of hours- 5
Definition and importance of Organizational Behaviour (OB), Key elements: people, structure, technology, and environment, Levels of OB: individual, group, and organizational, OB in healthcare and allied health settings, Case studies in organizational behaviour		
Unit number-2	**Tittle: Leadership and Management Styles**	**No. of hours-5**
Difference between leadership and management, Classical and contemporary leadership theories (Transformational, Transactional, Situational, etc.), Leadership styles in healthcare organizations, Qualities of effective leaders in patient-centered care, Ethical and emotional leadership		
Unit number-3	**Title: Team Dynamics and Communication**	**No. of hours- 7**
Types of teams: functional, cross-functional, self-managed, Stages of team development (Tuckman's model), Effective team building and collaboration, Interpersonal communication skills, Conflict resolution and negotiation techniques		
Unit number-4	**Title: Motivation and Performance Management**	**No. of hours- 7**
Theories of motivation (Maslow's Hierarchy, Herzberg, McClelland), Factors influencing employee motivation in healthcare, Goal-setting and performance feedback, Job satisfaction and employee engagement, Introduction to appraisal systems		
Unit number-5	**Title: Human Resource Practices in Healthcare Organizations**	**No. of hours- 6**
Role of HR in healthcare, Recruitment, selection, and induction process, Training and development of healthcare staff, Managing diversity and workplace ethics, Legal and professional standards in healthcare HR		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. Stephen P. Robbins & Timothy A. Judge.
Organizational Behavior (Latest Edition) – Pearson Education

Suggested Readings:

1. **Daniel Goleman.**
   Primal Leadership: Unleashing the Power of Emotional Intelligence – Harvard Business Review Press.
2. **Mintzberg, H.**
   Managing – Berrett-Koehler Publishers.

3. **Luthans, F.**
Organizational Behavior: An Evidence-Based Approach – McGraw Hill.

Open Educational Resources (OER):

- **MIT OpenCourseWare – Organizational Leadership and Change**
https://ocw.mit.edu
- **Saylor Academy – Principles of Management**
https://www.saylor.org/courses/bus208/
- **OpenLearn (by The Open University) – Leadership and Management in Health and Social Care**
https://www.open.edu/openlearn/
- **Coursera (Free with Audit) – Organizational Behavior by Northwestern University**
https://www.coursera.org

SEMESTER-IV

SEMESTER IV					
Course Code BPRT401	**Course Title** Respiratory Therapy - Clinical I	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-VII				
Total Contact Hours	45 Hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites:** Successful completion of foundational courses in Human Anatomy and Physiology**,** Basic Respiratory Care Procedures**,** and Applied Pharmacology is required. **Co-Requisites -** Concurrent enrolment in Respiratory Care Procedures I and Cardiopulmonary Physiology is recommended to reinforce clinical concepts with theoretical knowledge.				

Course Perspective:
This course provides an in-depth understanding of various respiratory disorders, focusing on upper respiratory tract diseases, pulmonary infections, airway and interstitial lung diseases, and pleural conditions.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Explain the pathophysiology and clinical manifestations of upper respiratory disorders.

CO2: Describe the types, causes, and treatment of pulmonary infections including tuberculosis and pneumonia.

CO3: Differentiate between obstructive and restrictive airway diseases, including asthma, COPD, and bronchiectasis.

CO4: Discuss interstitial lung diseases and their clinical significance.

CO5: Analyze the diagnosis and management of pleural diseases such as effusion, pneumothorax, and empyema.

CO6: Apply clinical knowledge to identify and manage respiratory conditions through evidence-based approaches.

Course Outline:

Unit number-1	**Title** : **Upper Respiratory Disorders**	**No. of hours-10**
Upper Respiratory Tract: Acute rhinitis, sinusitis, pharyngitis, Larynogotrachiitis and Epiglottitis , Sleep Apnoea Syndrome – OSA , CSA , MSA		
Unit number-2	**Title**: **Pulmonary Infections**	**No. of hours- 9**
Pulmonary Infections - Common viral and fungal lower respiratory infections. Pulmonary tuberculosis. Pneumonia: community acquired, hospital acquired, in immune compromised host. Atypical pneumonia. Lung abscess.		
Unit number-3	**Title: Airway And Interstitial Lung Disease**	**No. of hours- 10**
Diseases of the Airway - Bronchitis, Asthma, Chronic Obstructive Pulmonary Disease (COPD), Bronchiectasis, Interstitial Lung Disease		
Unit Number-4	**Title: Interstitial Lung Disease**	**No. of hours-8**
Interstitial Lung Disease -types, pathophysiology and treatment		
Unit Number-5	**Title: Pleural Diseases**	**No. of hours-8**
Pleural Diseases- Pleural Effusion, Pneumothorax, Hemothorax, Empyema, Thoracis.		

Learning Experience:

This course enables students to develop a comprehensive understanding of respiratory diseases, beginning with upper respiratory tract infections and sleep apnea syndromes. It progresses to detailed study of pulmonary infections such as tuberculosis, pneumonia, and lung abscess, emphasizing clinical presentation and treatment in various settings. Students will also explore chronic airway diseases like asthma, COPD, and bronchiectasis, along with interstitial lung diseases and pleural conditions.

Textbooks:

1. Fundamentals of Respiratory Care" by Robert M. Kacmarek, J. M. Stoller, and Al Heuer

Suggested Readings:

1. "Applied Respiratory Physiology" by Peter J. S. D. DePalo
2. "Respiratory Care: Principles and Practice" by Dean Hess and J. M. Albin

3. "Clinical Respiratory Medicine" by Steven E. Weinberger and J. W. K. Cloutier

Open Educational Resources (OER):

1. American Association for Respiratory Care (AARC) – www.aarc.org
2. MedEdPortal
3. YouTube channels on RT procedure demos (e.g., RTClinic, Khan Academy Medicine)

Practical

SEMESTER IV					
Course Code **BPRT451**	**Course Title** **Respiratory Therapy - Clinical I**	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major-VII Practical's				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisites	**Pre-Requisites:** Successful completion of foundational courses in Human Anatomy and Physiology**,** Basic Respiratory Care Procedures**,** and Applied Pharmacology is required. **Co-Requisites -** Concurrent enrolment in Respiratory Care Procedures I and Cardiopulmonary Physiology is recommended to reinforce clinical concepts with theoretical knowledge.				

Course Perspective:

This course provides foundational clinical exposure and hands-on skills in patient assessment and basic respiratory care. It aims to bridge theoretical knowledge with practical application, focusing on safe and effective delivery of oxygen therapy, aerosol administration, chest physiotherapy, and accurate clinical documentation. The training prepares students to make informed therapeutic decisions and perform procedures with confidence in varied healthcare settings.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Demonstrate effective history taking and clinical examination for respiratory patients.

CO2: Assess respiratory needs and plan appropriate therapeutic interventions.

CO3: Administer oxygen therapy using devices like nasal cannula, face mask, and Venturi mask safely and appropriately.

CO4: Perform nebulization procedures with correct equipment setup and patient technique.

CO5: Apply chest physiotherapy techniques including postural drainage and percussion.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Demonstration of history taking and clinical examination	CO1
2	Patient assessment and therapeutic decision-making	CO2
3	Oxygen therapy – nasal cannula, face mask, Venturi mask	CO3
4	Nebulization technique – equipment setup and patient use	CO4
5	Chest physiotherapy – postural drainage and percussion	CO4
6	Humidification techniques – types and application	CO5
7	Documentation of procedures and patient response	CO5

Open Educational Resources (OER):

1. WHO Clinical Examination Guidelines
2. NIH Open Respiratory Therapy Protocols
3. Open Respiratory eTextbooks from MedEdPORTAL
4. Khan Academy videos on respiratory anatomy and therapy techniques
5. RTStudent.com (free access videos and clinical resources)

SEMESTER IV					
Course Code BPRT402	**Course Title** Respiratory Therapy - Applied I	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-VIII				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites:** Completion of Human Anatomy and Physiology, Basic Respiratory Therapy Procedures, and Applied Physiology of the Respiratory and Cardiovascular Systems. **Co-Requisites** Concurrent enrolment in Mechanical Ventilation Theory, Cardiopulmonary Pharmacology, and Respiratory Equipment & Instrumentation to support hands-on clinical applications.				

Course Perspective:

This course is designed to provide foundational and practical knowledge in respiratory care and mechanical ventilation. It equips students with the skills necessary to assess patient needs, initiate

appropriate respiratory therapies, and operate and monitor life-support equipment effectively. Emphasis is placed on understanding respiratory physiology, accurate documentation, ventilator setup, interpretation of ventilator waveforms, and real-time patient monitoring

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Document respiratory care procedures accurately and systematically.

CO2: Assess the need for Respiratory Therapy based on clinical findings.

CO3: Describe basic principles of mechanical ventilation including compliance, resistance, and ventilation parameters.

CO4: Demonstrate the ability to set up and operate different types of mechanical ventilators.

CO5: Interpret ventilator waveforms and make necessary adjustments.

CO6: Monitor patients effectively using clinical and instrumental methods during mechanical ventilation.

Course Outline:

Unit number-1	**Title : Documentation and Assessment for Respiratory care**	**No. of hours- 7 HRS**
Documentation in respiratory care, Assessment for need of respiratory care and therapy, Respiratory care for pulmonary manifestation/complications of diseases of other organ systems.		
Unit number-2	**Title**: **Principles of Mechanical Ventilation**	**No. of hours- 8**
Resistance, lung compliance, dead space ventilation, ventilator failure, oxygenation failure, clinical conditions leading to mechanical ventilation, and operating modes of mechanical ventilation.		
Unit Number 3	**Title- Mechanical Ventilation-Basic**	**No. of hours- 10**
Mechanical Ventilators- Classification, working principles, drive mechanism, Control circuits, control variables, phase variables, output, waveform, alarm system, and basic ventilator waveform analysis.		
Unit number-4	**Title: Initiation of Mechanical Ventilation**	**No. of hours- 8**
Indications, contraindications, initial ventilator settings, ventilator alarm settings, and hazards and complications.		
Unit number-5	**Title: Mechanical ventilation – Monitoring**	**No. of hours-12**
Concepts of monitoring, vital signs, chest inspection and auscultation, fluid electrolyte balance, arterial blood gases, oxygen and end tidal carbon dioxide monitoring.		

Learning Experience:

Students will engage in a combination of interactive lectures, clinical demonstrations, and hands-on simulation-based training to develop essential competencies in respiratory care documentation, patient assessment, and mechanical ventilation. Through real-case discussions, they will learn to evaluate respiratory conditions, interpret physiological data, and select appropriate ventilator settings. Skills labs and supervised practice will help them operate different ventilators, analyze waveform data, and respond to alarms effectively.

Textbooks:

Fundamentals of Respiratory Care" by Robert M. Kacmarek, J. M. Stoller, and Al Heuer **Suggested Readings:**

1. "Applied Respiratory Physiology" by Peter J. S. D. DePalo
2. "Respiratory Care: Principles and Practice" by Dean Hess and J. M. Albin
3. "Clinical Respiratory Medicine" by Steven E. Weinberger and J. W. K. Cloutie

Open Educational Resources (OER):

4. www.aarc.org – American Association for Respiratory Care
5. www.rcjournal.com – Respiratory Care Journal
6. Elsevier ClinicalKey and Medscape articles
7. Ventilator simulators: IngMar Medical, VentSim
8. YouTube: Demonstrations from reputable clinical institutions

Practical

SEMESTER IV					
Course Code BPRT451	**Course Title** Respiratory Therapy - Applied I	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major VIII-Practical's				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisites	**Pre-Requisites:** Completion of Human Anatomy and Physiology**,** Basic Respiratory Therapy Procedures, and Applied Physiology of the Respiratory and Cardiovascular Systems**.** **Co-Requisites** Concurrent enrollment in Mechanical Ventilation Theory**,** Cardiopulmonary Pharmacology and Respiratory Equipment & Instrumentation to support hands-on clinical applications.				

Course Perspective:

This course provides in-depth knowledge and hands-on skills in the assessment, initiation, and monitoring of patients on mechanical ventilation. Emphasis is placed on documentation, recognizing ventilator complications, planning home care, and handling respiratory equipment like ventilators, non-invasive ventilation (NIV), and infusion pumps.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Document respiratory care procedures accurately and systematically.

CO2: Assess the need for Respiratory Therapy based on clinical findings and patient condition.

CO3: Explain basic principles of mechanical ventilation including compliance, resistance, and ventilatory parameters.

CO4: Set and adjust mechanical ventilators and related devices according to patient condition.

CO5: Recognize and interpret ventilator alarms and waveforms to identify complications and respond appropriately.

CO6: Monitor patient status using clinical signs and monitoring devices including ABG, $EtCO_2$, and vital signs.

CO7: Develop care plans for home-based ventilatory support and patient education.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Documentation of procedures and patient progress	CO1
2	Clinical case discussions and management planning	CO2, CO4, CO5
3	Setting up initial ventilator parameters for various clinical scenarios	CO3, CO4
4	Operating mechanical ventilators and NIV systems	CO4, CO5
5	Handling infusion and syringe pumps for ventilated patients	CO6, CO4
6	Demonstration: ABG, SpO_2, $EtCO_2$, ECG monitoring	CO6
7	Identification of ventilator-related complications	CO5, CO6
8	Home care plan development for ventilated patients	CO7

Open Educational Resources (OER):

1. www.aarc.org – American Association for Respiratory Care
2. www.rcjournal.com – Respiratory Care Journal
3. Elsevier ClinicalKey and Medscape articles

4. Ventilator simulators: IngMar Medical, VentSim
5. YouTube: Demonstrations from reputable clinical institutions

SEMESTER IV					
Course Code BPRT403	**Course Title** Respiratory Therapy – Advanced-I	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-IX				
Total Contact Hours	45 Hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites-** Prior coursework in Mechanical Ventilation**,** Cardiopulmonary Pathophysiology**,** and Advanced Respiratory Procedures **Co-Requisites-** Concurrent enrolment in Critical Care Pharmacology**,** Advanced Cardiopulmonary Monitoring**,** and Interdisciplinary Critical Care Practices				

Course Perspective:

This course is designed to equip students with advanced clinical competencies in the use of evolving respiratory care technologies and interventions. It emphasizes critical thinking, evidence-based practice, and interdisciplinary collaboration for managing critically ill patients in intensive care and emergency settings.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1. Identify, explain, and demonstrate the use of newer oxygen therapy devices including portable and ambulatory oxygen systems.

CO2. Understand the principles, indications, and applications of Hyperbaric Oxygen Therapy (HBOT), including its use in decompression sickness, caisson disease, and high-altitude pulmonary edema.

CO3. Differentiate between invasive and non-invasive ventilation methods, with detailed knowledge of NIPPV modes like CPAP and BiPAP.

CO4. Analyse and manage mechanical ventilation strategies, troubleshoot ventilator issues, and apply appropriate pharmacological agents during mechanical ventilation.

CO5. Apply advanced ventilator modes and neonatal mechanical ventilation, including surfactant therapy, high-frequency, and liquid ventilation techniques.

Course Outline:

Unit number-1	Title : Newer Oxygen therapy devices and hyperbaric oxygen therapy	No. of hours- 8 HRS
Newer Oxygen therapy devices: Portable/Ambulatory oxygen therapy, Hyper baric Oxygen therapy: decompression sickness, caissons disease, high altitude pulmonary oedema.		
Unit number-2	**Title: Invasive Mechanical Ventilation**	**No. of hours- 10 hrs**
Noninvasive Positive Pressure Ventilation - Introduction, Terminology, Indications, CPAP, Bilevel PAP , Principles and Mechanism of Action of NIV in Various Clinical Settings , Contraindications and Monitoring During NIV NIV Interface / Mask and Types		
Unit number-3	**Title: Advanced Management of Mechanical Ventilation**	**No. of hours- 11 hrs**
Management & Troubleshooting of Mechanical Ventilation **,** Strategies to improve ventilation, improve oxygenation, acid-base & electrolyte balance and their correction, fluid, electrolyte, nutrition balance and management, ventilator alarms and events, care of the ventilation circuit, care of the artificial airway, safety mechanisms and alarms in ventilators , Pharmacotherapy for Mechanical Ventilation **,** Drugs for improving ventilation, steroids, MDI medications, neuromuscular blocking agents like nitric oxide, propofol, and anesthetic gases.		
Unit number-4	**Title: Newer Modes and neonatal ventilation**	**No. of hours- 8hrs**
Intubation and problems inherent to the neonate, surfactant replacement therapy, basic principles of neonatal ventilation, modes, initiation and maintenance, high-frequency ventilation, liquid ventilation		
Unit number-5	**Title: Bronchoscopy and Medical Thoracoscopy**	**No. of hours- 8hrs**
Bronchoscopy: Instrument and components , Indications and contraindications Pre Procedure evaluation Preparation of patient for procedure Monitoring during procedure Post procedure care , Medical Thoracoscopy: Instrument and components. Indications and contraindications Pre Procedure evaluation Preparation of patient for procedure e. Monitoring during procedure .Post procedure care		

Learning Experience:

- Interactive lectures with real-life clinical case studies.
- Simulation labs for ventilator setup, monitoring, and troubleshooting.
- Skill-based workshops on bronchoscopy, thoracoscopy, and neonatal ventilation.
- Group discussions and role plays to improve decision-making in emergencies.
- Peer-reviewed article analysis to build research literacy.
- Clinical postings/internships in ICU and pulmonary medicine departments for hands-on exposure.

Textbooks:

1. "Respiratory Care: Principles and Practice" by Dean Hess and J. M. Albin

Suggested Readings:

1. "Egan's Fundamentals of Respiratory Care" by Robert M. Kacmarek, J. M. Stoller, and Al Heuer
2. "Clinical Respiratory Medicine" by Steven E. Weinberger, J. W. K. Cloutier, and W. F. H. Chapman
3. "Mechanical Ventilation: Clinical Applications and Pathophysiology" by Robert L. Wilke and David H. Collins

Open Educational Resources (OER):

- **Oxygen Therapy and Hyperbaric Medicine:** Undersea & Hyperbaric Medical Society (UHMS)
- NHS e-Learning for Healthcare - Oxygen Therapy Modules
- **Mechanical Ventilation and NIV:**
- VentBook: Basics of Mechanical Ventilation (Free eBook)
- OpenCriticalCare.org – Ventilator Learning Modules
- **Neonatal Ventilation:**
- OPENPediatrics – Neonatal Mechanical Ventilation
- **Bronchoscopy and Thoracoscopy:**
- CHEST Foundation – Bronchoscopy Education
- European Respiratory Society (ERS) Learning Resources

Practical

SEMESTER iV					
Course Code BPRT452	**Course Title** Respiratory Therapy - Advanced I	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major-IX Practical's				
Total Contact Hours	30				
Pre-Requisites/Co-Requisites	**Pre-Requisites-** Prior coursework in Mechanical Ventilation, Cardiopulmonary Pathophysiology, and Advanced Respiratory Procedures **Co-Requisites-** Concurrent Practical's in Critical Care Pharmacology, Advanced Cardiopulmonary Monitoring, and Interdisciplinary Critical Care Practices				

Course Perspective:

This course aims to develop hands-on proficiency in the operation and interpretation of critical care equipment and clinical skills essential in managing patients in respiratory failure. The focus is on experiential learning**,** problem-solving in real-time scenarios**,** and interprofessional collaboration**.** It bridges theoretical knowledge with practical application**,** preparing students for ICU roles, emergency response**,** and interventional procedures in Respiratory Therapy.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1. Demonstrate the setup and operation of invasive and noninvasive ventilators, patient monitors, and infusion/syringe pumps in a critical care environment.
CO2. Analyze and interpret basic ventilator waveforms to assess patient-ventilator synchrony.
CO3. Identify and correct abnormalities in arterial blood gases (ABG), acid-base balance, and electrolytes.
CO4. Demonstrate changes in ventilator parameters using a test lung to understand lung mechanics.
CO5. Identify the common drugs used in respiratory care and their indications, routes, and effects.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1.	Setup and operation of mechanical ventilators, NIV devices, syringe and infusion pumps	CO1
2.	Recognition and interpretation of ventilator waveforms (pressure, flow, volume)	CO2
3.	ABG analysis and correction of acid-base and electrolyte abnormalities	CO3
4.	Simulated demonstration on test lung: effects of PEEP, tidal volume, compliance, resistance	CO4
5.	Overview and identification of drugs used in respiratory care (e.g., bronchodilators, sedatives)	CO5
6.	Preventive maintenance and troubleshooting of ventilators and circuits	CO6
7.	Execution of basic critical care tasks: suctioning, nebulization, sedation monitoring, etc.	CO7
8.	Patient preparation, assisting during bronchoscopy, monitoring, and recovery	CO8

Open Educational Resources (OER):

OpenCriticalCare.org - Ventilator Simulator & Training https://www.opencriticalcare.org/

Geeky Medics - ABG Interpretation Guide
https://geekymedics.com/arterial-blood-gas-interpretation/

Life in the Fast Lane (LITFL) - ABG Cases - https://litfl.com/category/clinical-cases/abg/

SEMESTER IV					
Course Code BPAH404	**Course Title** Disaster Management and Environmental Science	**L**	**T**	**P**	**C**
Version	2025	**3**	**0**	**0**	**3**
Category of Course	MDP-III				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	Pre-requisite: Students should have a basic understanding of geography, environmental science, and general science concepts, including the structure of the Earth, weather patterns, and human-environment interactions. Co-requisite: Students should also study public health, sociology, environmental law, and basic statistics to understand the social impact, legal aspects, and data analysis in disaster and environmental management.				

Course Perspective :

This course offers an integrated understanding of disaster management and environmental systems. It emphasizes the phases of disaster response and recovery while highlighting the interdependence between human activities and natural ecosystems. Students will explore risk reduction strategies, environmental laws, global challenges like climate change, and sustainable solutions such as bioremediation.

Course Outcomes:

CO1: Explain the phases and types of disasters along with their impacts on society and the environment.

CO2: Analyze risk reduction strategies, including structural and non-structural mitigation, and assess vulnerability and resilience.

CO3: Interpret ecosystem dynamics, including energy flow, biodiversity, and human-environment interactions.

CO4: Evaluate preparedness plans such as emergency operations, drills, and resource management, with emphasis on inclusive approaches.

CO5: Identify major global environmental issues and pollution sources, and propose control and preventive measures.

Course Outline:

Unit number-1	**Title:** DM Overview & Env. Components	**No. of hours- 9 hrs**
DM: Definition, phases (mitigation, preparedness, response, recovery), types of disasters (natural, man-made), impacts, and basic preparedness. **ES:** Earth's spheres (hydro, litho, atmos, bio) and human interactions.		
Unit number-2	**Title:** DM Mitigation & Ecosystems	**No. of hours- 9 hrs**
DM: Risk reduction through mitigation (structural/non-structural), hazard/vulnerability analysis, resilient infrastructure, and policy drafting. **ES:** Ecosystem basics, biotic/abiotic, food webs, energy flow, and characteristics of terrestrial/aquatic ecosystems.		
Unit number-3	**Title:** DM Preparedness & Global Env. Problems	**No. of hours- 9 hrs**
DM: Planning for disasters (EOPs, drills, resource management), and integrating child/gender protection. **ES:** Major global issues: climate change (GHG, global warming, acid rain), ozone depletion, deforestation, biodiversity loss, and chemical/radiation hazards.		
Unit number-4	**Title:** DM Response/Recovery & Env. Pollution	**No. of hours- 9 hrs**
DM: Immediate actions (response), long-term rebuilding (recovery), "Build Back Better," and leveraging disasters for development. **ES:** Sources, impacts, and control of air, water, and land pollution, plus specific issues like chlorinated hydrocarbons and endocrine disruptors.		
Unit number-5	**Title:** Environmental Management, Environmental Protection Act, Bioremediation	**No. of hours- 9 hrs**
Environmental health, pollution-related diseases, waste treatment (liquid/solid), and quality standards/monitoring. Key Indian environmental laws, movements, ethics, international frameworks (IUCN, UN), human rights links, and global responsibilities. Using living organisms for environmental cleanup (oil spills, wastewater, chemicals, heavy metals).		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare**.**

Textbooks:

1. Introduction to International Disaster Management – Damon P. Coppola
2. Disaster Management Handbook – Jack Pinkowski

Suggested Readings:

1. Encyclopedia of Disaster Relief – K. Bradley Penuel, Matt Statler
2. Disaster Management and Preparedness – Judith E. Rycus, Ronald C. Hughes

3. Disaster Management: Future Challenges and Opportunities – Alejandro Lopez-Carresi
4. Disaster Management and Risk Reduction: Role of Environmental Knowledge – Rajib Shaw (Indian Author)

Open Educational Resources (OER):

- **National Disaster Management Authority (NDMA), India**
  Website: https://ndma.gov.in
- **United Nations Office for Disaster Risk Reduction (UNDRR)**
  Website: https://www.undrr.org
- **Environmental Protection Agency (EPA), USA**
  Website: https://www.epa.go

SEMESTER-IV

SEMESTER IV					
Course Code BPRT405	**Course Title** Chest Physical Therapy and Pulmonary Rehabilitation	**L**	**T**	**P**	**C**
Version	2025	**2**	**0**	**0**	**2**
Category of Course	SEC-III				
Total Contact Hours	30 hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites-** Basic knowledge of human anatomy and physiology, particularly of the respiratory and cardiovascular systems. **Co-Requisites-** Concurrent enrollment in Clinical Respiratory Care I or a related practical course is encouraged to facilitate hands-on learning and clinical integration.				

Course Perspective:

This course introduces the foundational concepts of physical therapy in relation to respiratory care, focusing on chest physiotherapy techniques, respiratory muscle strengthening, and pulmonary rehabilitation. It covers both hospital-based and home-care approaches, emphasizing patient assessment, therapy planning, safety considerations, and evidence-based therapeutic modalities.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1. Understand the physical principles applied in chest physical therapy.

CO2. Assess the patient's condition and determine the need for airway clearance and lung expansion

therapy.

CO3. Apply appropriate airway clearance and lung expansion techniques with monitoring.

CO4. Demonstrate competence in prescribing and supervising respiratory muscle training and breathing exercises.

CO5. Plan and implement pulmonary rehabilitation programs, including cardiopulmonary exercise testing.

CO6. Prepare and manage comprehensive home care plans for long-term pulmonary care

Course Outline:

Unit number-1	**Title : Introduction**	**No. of hours- 5 hrs**
Introduction to Physical Therapy: Mention of physical quantities and basic principles used in physical therapy. **Introduction to Chest Physical Therapy:** Assessment of need for chest physical therapy, use and principles of chest physical therapy methods and devices, selection of method and device, precautions, monitoring of patient, and preparation of care plan.		
Unit number-2	**Title**: **Airway Clearance Therapy**	**No. of hours-7**
Indications, contraindications, procedure, complications; selection of method and device, precautions, and monitoring of patient.		
Unit number-3	**Title: Lung Expansion Therapy**	**No. of hours-6**
Indications, contraindications, procedure, complications; selection of method and device, precautions, and monitoring of patient.		
Unit number-4	**Title: Respiratory Muscle Strengthening**	**No. of hours-4**
: Indications, contraindications, procedure, complications; selection of method and device, precautions, and monitoring of patient.		
Unit number-5	**Title: Pulmonary Rehabilitation and Home care Plan**	**No. of hours-8**
Goals, scientific basis and principles; components and methods; assessment of the patient and selection; cardiopulmonary exercise testing; planning the rehabilitation program; monitoring during rehabilitation and complications; cardiac rehabilitation. Home Care Plan for Pulmonary Rehabilitation.		

Learning Experience:

Students will gain a comprehensive understanding of physical therapy principles as applied to respiratory care. Through case-based learning and hands-on sessions, they will learn to assess the need for chest physiotherapy, select appropriate airway clearance and lung expansion techniques, and implement respiratory muscle training. Emphasis will be placed on clinical decision-making, procedural safety, patient monitoring, and planning individualized pulmonary rehabilitation and home

care programs. Practical exposure will enhance their competence in using therapeutic devices and managing complications effectively in real-world clinical settings.

Textbooks:

1. Physical Therapy for the Pulmonary Patient" by Deborah L. Haines and Michael L. S. Gossman

Suggested Readings:

1. "Pulmonary Rehabilitation: Guidelines to Success" by John R. Bach and David P. Claman
2. "Pulmonary Rehabilitation: An Interdisciplinary Approach" by Scott T. K. Trujillo and Janet L. Weinberger"
3. Chest Physical Therapy: A Clinical Approach" by Robert L. Wilke and Barbara

Open Educational Resources (OER):

1. https://reliasacademy.com/rls/store/courses/skill-builder-performing-chest-pt/_/A-product-c1201504?utm_source=chatgpt.com
2. https://rotherhamrespiratory.com/lungs-courses/pulmonary-rehabilitation-course-online/?utm_source=chatgpt.com
3. https://respirehab.com/?utm_source=chatgpt.com

SEMESTER V					
Course Code BPAH406	**Course Title** Entrepreneurship in Allied Healthcare	**L**	**T**	**P**	**C**
Version	2025	2	0	0	2
Category of Course	VAC-IV				
Total Contact Hours	30 Hrs				
Pre-Requisites/ Co-Requisites	Pre-requisite: Basic understanding of healthcare systems and management. Co-requisite: Concurrent enrolment in a course related to healthcare management, finance, or public health is suggested to reinforce practical understanding.				

Course Perspective :

To expose the students with the growth of entrepreneurship in developing countries with special reference to India.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand the essential characteristics, traits, and legal requirements for starting a healthcare enterprise.
CO 2: Apply practical methods for initiating and expanding new ventures in the healthcare sector.
CO 3: Prepare and evaluate a feasibility report for a healthcare project considering market, technical, and financial aspects.
CO 4: Recognize the roles of financial and promotional institutions in supporting entrepreneurship and identify key elements of entrepreneurship development programs

Course Outline:

Unit number-1	**Tittle:** Introduction to Entrepreneurship	**No. of hours-5**
Entrepreneur characteristics, qualities, prerequisites, small business concepts, government policy, clearances, new enterprise setup.		
Unit number-2	**Tittle:** Business Opportunity in Healthcare	**No. of hours-5**
Opportunity identification, new venture development, startup methods, business expansion, venture life cycle, environmental factors, causes of business failure.		
Unit number-3	**Tittle:** Feasibility Study	**No. of hours-5**
Feasibility report, economic/technical/financial/managerial feasibility, factory location, demand analysis, market potential, project costing, working capital, profit & tax planning.		
Unit number-4	**Tittle:** Sources of Finance	**No. of hours-5**
SIDBI, NSIC, DIC, SSIB, government financial support, promotional agencies, funding schemes, entrepreneurship development support.		
Unit number-5	**Tittle:** Entrepreneurship Development Programme (EDP)	**No. of hours-5**
EDP phases, relevance, challenges, training, skill development, implementation issues, role in business success.		

Learning Experience:

The course combines interactive lectures, visual aids, hands-on labs, group work, and case studies. Online tools like quizzes, assignments, projects, and case studies, along with attendance tracking and continuous assessment, ensure active participation. Regular feedback supports theoretical and practical skill development in healthcare.

Textbooks:

1. Ambulance Operations and Patient Care – Richard Beebe

2. Fundamentals of Emergency Vehicle Operations – Chris Daly

Suggested Readings:

1. Principles of Emergency Vehicle Response – Robert Murray
2. Emergency Vehicle Operations: A Line Officer's Guide – Bruce J. Miller
3. Ambulance Driver Training Manual – National Highway Traffic Safety Administration (NHTSA)
4. Emergency Medical Responder: First on Scene – Chris Le Baudour, J. David Bergeron

Open Educational Resources (OER):

- **National Small Industries Corporation (NSIC)** – https://www.nsic.co.in
- **Startup India Portal** – https://www.startupindia.gov.in
- **Small Industries Development Bank of India (SIDBI)** – https://www.sidbi.in
- **MIT OpenCourseWare – Entrepreneurship** – https://ocw.mit.edu
- **World Bank Open Learning Campus** – Entrepreneurship modules https://olc.worldbank.org

SEMESTER-V

SEMESTER V					
Course Code BPRT501	**Course Title** Respiratory Therapy - Clinical II	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-X				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites-** Students should have foundational knowledge of human anatomy and physiology, especially of the respiratory and cardiovascular systems. Basic understanding of pathophysiology and clinical symptoms of respiratory diseases is essential. **Co-Requisites -** Students should concurrently study subjects like pharmacology, medical imaging, clinical pathology, and pediatric care.				

Course Perspective:

This course provides in-depth knowledge of complex respiratory conditions including chest wall abnormalities, neuromuscular and pulmonary vascular diseases, acute lung injury, ARDS, lung cancer, and paediatric respiratory disorders. Emphasis is placed on understanding pathophysiology, clinical features, diagnostics, and management strategies for both adult and pediatric populations.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Describe the pathophysiology and clinical features of chest wall deformities and neuromuscular respiratory conditions.
CO2: Discuss the causes, manifestations, and treatment of major pulmonary vascular diseases including pulmonary hypertension and embolism.
CO3: Explain the mechanisms and clinical implications of pulmonary edema, acute lung injury, and ARDS.

CO4: Analyze the types, diagnostic approaches, and management plans for lung cancer.
CO5: Identify and manage common respiratory disorders in neonates and children.

Course Outline:

Unit number-1	**Title : Chest wall and pulmonary vascular disease**	**No. of hours- 10**
Neuromuscular Diseases and Chest Wall Abnormalities such as Kyphosis, scoliosis , Neuromuscular diseases affecting respiratory muscles		
Unit number-2	**Title: Pulmonary Vascular Diseases**	**No. of hours- 9**
Pulmonary Vascular Diseases - Pulmonary hypertension , Pulmonary thromboembolism, Pulmonary haemorrhage		
Unit number-3	**Title**: **Acute Lung Conditions**	**No. of hours- 10**
Pulmonary Oedema, Acute lung injury and ARDS		
Unit number-4	**Title: Lung Cancer**	**No of Hours- 8**
Types and staging of lung cancer , Clinical features and diagnosis , Treatment approaches (surgical, medical, palliative)		
Unit number-5	**Title: Respiratory disorders in children**	**No. of hours-8**
Common pediatric respiratory conditions , bronchiolitis, asthma, pneumonia , neonatal respiratory distress syndrome, meconium aspiration syndrome , Diagnostic and therapeutic strategies in paediatric populations		

Learning Experience:

- Develop an understanding of the structure and function of respiratory muscles and how neuromuscular diseases impair ventilation.
- Identify and interpret the clinical manifestations of kyphoscoliosis and how they affect lung mechanics and gas exchange.
- Explore the role of pulmonary function tests and imaging in diagnosing chest wall abnormalities.
- Analyze the impact of diseases such as Myasthenia Gravis and Guillain-Barré Syndrome on respiratory muscle strength.
- Understand the pathophysiology and classification of pulmonary hypertension**,** and relate it to right heart function and oxygenation.
- Recognize the clinical features, diagnostic workup, and emergency management of pulmonary thromboembolism**.**
- Study the causes, symptoms, and supportive management strategies for pulmonary haemorrhage**,** including bronchoscopy and ventilation considerations.

Textbooks:

1. "Clinical Applications of Respiratory Care" by Dean Hess and J. M. Albin

Suggested Readings:

1. Advanced Respiratory Care: Clinical Management and Practice" by Michael J. H. Bennett and Andrew M. D. Scott
2. "The Clinical Practice of Respiratory Care" by Robert M. Kacmarek and James W. Stoller
3. "Management of Respiratory Disorders: An Integrated Approach" by R. Philip Dellinger and Michael M. Jones

Open Educational Resources (OER):

- MedEdPortal
- Radiopaedia.org
- ACLS/PALS online simulations (AHA)
- ABG and ECG interpretation simulators

Practical

SEMESTER V					
Course Code BPRT551	**Course Title** Respiratory Therapy - Clinical II	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major – X Practical				
Total Contact Hours	30				
Pre-Requisites/Co-Requisites	**Pre-Requisites-** Basic understanding of respiratory physiology**,** mechanical ventilation**,** and patient monitoring techniques **Co-Requisites -** Concurrent study **of** Critical Care Pharmacology or Pathophysiology of Respiratory Disorders				

Course Perspective:
This course is designed to enhance students' clinical proficiency in managing critically ill patients with complex respiratory conditions. It emphasizes hands-on experience in intensive care settings, focusing on advanced ventilator management, patient assessment, emergency interventions, and interprofessional collaboration.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Perform and explain respiratory care procedures with correct preparation and patient safety.

CO2: Select suitable therapy methods based on patient condition and monitor response.

CO3: Interpret PFTs, ABGs, ECGs, and chest X-rays to guide respiratory care

CO4: Design and implement pulmonary rehabilitation and home care plans

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Demonstration and performance of airway clearance techniques (e.g., percussion, vibration)	CO1
2	Selection and application of chest physiotherapy devices	CO2
3	Interpretation and discussion of Pulmonary Function Test (PFT) reports	CO3
4	Analysis and interpretation of Arterial Blood Gas (ABG) results	CO3
6	Basic ECG interpretation relevant to respiratory conditions	CO3
6	Conducting lung expansion therapy (e.g., incentive spirometry, IPPB)	CO1 , CO2
7	Planning and executing a basic pulmonary rehabilitation session	CO4
8	Creating a home care and rehab plan for chronic respiratory patients	CO4

Open Educational Resources (OERs):

- **MedEdPORTAL – Association of American Medical Colleges (AAMC)**
  Website: https://www.mededportal.org
- **Khan Academy – Human Anatomy & Physiology (Respiratory System)**
  Website: https://www.khanacademy.or
- **NBRC Clinical Practice Guidelines (via AARC)**
  Website: https://www.aarc.or
- **MIT OpenCourseWare – Health Sciences & Technology**
  Website: https://ocw.mit.edu

SEMESTER V					
Course Code BPRT502	**Course Title** Respiratory Therapy - Applied II	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-XI				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites -** Fundamental knowledge of human anatomy and physiology**,** Familiarity with basic mechanical ventilation principles and respiratory devices is essential. **Co-Requisites -** It is recommended that students concurrently study pharmacology, critical care medicine, patient assessment, and cardiopulmonary diagnostics to apply theoretical knowledge in clinical settings and manage ventilated patients more effectively.				

Course Perspective:

This course provides an in-depth understanding of mechanical ventilation, including its monitoring, complications, and weaning strategies. It also emphasizes the importance of continuing respiratory care in community and home settings. The course integrates clinical case discussions to prepare students for real-life situations and fosters the ability to educate patients and families in long-term respiratory care strategies.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Analyze the impact of different ventilator settings on ventilation and oxygenation.

CO2: Evaluate the physiological effects of PEEP on various organ systems.

CO3: Recognize and manage complications of mechanical ventilation.

CO4: Apply weaning criteria, indices, and procedures in clinical scenarios.

CO5: Interpret and manage mechanical ventilation through clinical case studies.

CO6: Design and implement home respiratory care plans and provide patient education.

Course Outline:

Unit number-1	**Title** : **Mechanical ventilation - Monitoring**	**No. of hours-9 hrs**
Effects of various ventilator settings on ventilation and oxygenation.Effect of PEEP: pulmonary considerations, effects on the cardiovascular system, hemodynamic, renal & neurological considerations.		
Unit number-2	**Title**: **Mechanical ventilation - Complications, weaning and Clinical situations**	**No. of hours-9**
Weaning from Mechanical Ventilation- Weaning and its failure, weaning criteria and indices, weaning procedure, signs, causes of weaning failure. Clinical Situations with Case Studies of Mechanical Ventilation and Management		
Unit number-3	**Title : Weaning from Mechanical Ventilation**	**No of Hours- 9 hrs**
Definition, phases, and importance of weaning, Weaning criteria and indices (RSBI, vital capacity, etc.) , Causes and signs of weaning failure , Stepwise weaning procedures		
Unit number-4	**Title: Respiratory care in community**	**No. of hours-9**
Respiratory Care at Home-Home oxygen therapy, home non-invasive ventilation therapy, home aerosol therapy, home mechanical ventilation: goals, indications, patient selection, equipment selection, and home plan for chest physical therapy and pulmonary rehabilitation **, Health Education and Training -** Patient and family education: disease prevention and health promotion.		

Unit number-5	**Title: Case-Based Learning in Mechanical Ventilation**	**No. of hours-9**
Real-life case studies on ventilated patient, Clinical decision-making and ventilator adjustments, Management planning and interdisciplinary coordination		

Learning Experience:

The learning experience in this module equips students with the ability to critically analyze the impact of ventilator settings on oxygenation and ventilation, understand the physiological effects of PEEP, and recognize and manage complications arising from mechanical ventilation. Through case-based discussions, students develop skills in clinical decision-making, especially in weaning strategies and identifying causes of weaning failure. Additionally, the module emphasizes the importance of delivering respiratory care in community and home settings, including equipment use and patient safety. Students also learn to create and implement patient and family education plans, promoting long-term respiratory health and adherence to therapy.

Textbooks:

1. "Applied Respiratory Physiology" by Peter J. S. D. DePalo

Suggested Readings:

1. "Advanced Respiratory Care: Theory and Practice" by Martin G. MacIntyre and M. J. John
2. "Respiratory Care Anatomy and Physiology: Foundations for Clinical Practice" by William V. G. Schuster and Philip M. K. Angeletti
3. "Mechanical Ventilation: Clinical Applications and Pathophysiology" by Robert L. Wilke and David H. Collins

Open Educational Resources (OERs):

1. American Association for Respiratory Care (AARC)
2. Open Respiratory Medicine Journal
3. MedEdPORTAL – Simulation Cases

Practical

SEMESTER V					
Course Code BPRT552	**Course Title** Respiratory Therapy - Applied II	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major –XI Practical's				
Total Contact Hours	30				
Pre-Requisites/Co-Requisites	**Pre-Requisites -** Fundamental knowledge of human anatomy and physiology**,** particularly the respiratory and cardiovascular systems **Co-Requisites -** Concurrent study of related subjects such as Mechanical Ventilation**,** Pulmonary Pathology**,** or Advanced Cardiopulmonary Physiology				

Course Perspective:

This course focuses on developing competency in mechanical ventilation, patient monitoring, and home-based respiratory care. It combines theoretical knowledge with practical application in clinical scenarios to prepare students for effective respiratory support, complication management, and transition to home care setups.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Analyze clinical conditions requiring mechanical ventilation and select appropriate ventilator modes and settings.

CO2: Recognize complications associated with ventilation and implement appropriate preventive and corrective measures.

CO3: Demonstrate ability to set and adjust ventilators and monitoring devices based on patient needs.

CO4: Interpret data from ventilator waveforms, ABG, pulse oximetry, and capnography.

CO5: Develop and implement a comprehensive home care plan for patients requiring long-term respiratory support

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Demonstration of ventilator settings and adjustments	CO1 , CO3
2	Simulation of clinical complications and emergency response	CO2
3	Interpretation of ABG, pulse oximetry, and ventilator waveforms	CO4
4	Case-based planning for home mechanical ventilation	CO5
5	Hands-on with NIV, infusion and syringe pumps	CO3
6	Patient and caregiver training simulations	CO6

Open Educational Resources (OER):

- **Khan Academy Medicine** – Respiratory Physiology & Mechanical Ventilation Modules https://www.khanacademy.org
- **National Institute for Health and Care Excellence (NICE)** – Clinical Guidelines on Ventilation https://www.nice.org.uk
- **OpenAnesthesia** – Ventilator Management Tutorials https://www.openanesthesia.org
- **WHO Training Resources on Home-based Respiratory Care** https://openwho.org

SEMESTER V					
Course Code BPRT503	**Course Title** Respiratory Therapy - Advanced II	**L**	**T**	**P**	**C**
Version	2025	**3**	**0**	**0**	**3**
Category of Course	Minor-IV				
Total Contact Hours	45hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites-** Strong foundation in mechanical ventilation**,** arterial blood gas analysis**,** and critical care procedures **Co-Requisites-** Enrolment in or completion of Critical Care Pharmacology Advanced Clinical Practice				

Course Perspective:

This course is an introduction to the Respiratory Therapy student on the Neonatal respiratory physiology and mechanics and management of cardiopulmonary di sorders.

Course Outcomes:

On completion of the course the learner will be able to:

CO1: Explain the stages of fetal lung development and describe the mechanisms of gas exchange in neonates.

CO2: Demonstrate proficiency in applying neonatal resuscitation guidelines, including initial steps, PPV, and medication protocols.

CO3: Conduct comprehensive assessments of neonatal patients using standardized scoring systems and implement appropriate monitoring techniques.

CO4: Identify and interpret respiratory diagnostic tests applicable to pediatric and neonatal populations.

CO5: Analyze the pathophysiology, clinical manifestations, and evidence-based treatment approaches for common neonatal respiratory disorders.

Course Outline:

Unit number-1	**Tittle** - DEVELOPMENT OF RESPIRATORY SYSTEM	**No. of hours-9**
DEVELOPMENT OF RESPIRATORY SYSTEM - Fetal development Fetal lung development Fetal gas exchange and circulation Surfactant Production and Metabolism Composition of Surfactant Functions of Surfactant Artificial Surfactant- Semi-Synthetic & Synthetic Postnatal development Transition from intrauterine to extrauterine life Post-natal lung development		
Unit number-2	**Title**: Neonatal Resuscitation	**No. of hours-9**

Preparation for resuscitation Initial steps of newborn care Positive-pressure ventilation Airway management: Endotracheal tubes and laryngeal mask Chest compression Medication Post Resuscitation care Resuscitation and stabilization of babies born preterm		
Unit number-3	**Title:** Thermoregulation , Surfactant Replacement Therapy	**No. of hours-9**
Thermoregulation Thermoneutral environment Mechanisms of heat loss Hypothermia Prevention of hypothermia Kangaroo mother care , Need for surfactant therapy Techniques of surfactant delivery- Early/late rescue, INSURE, MIST, LISA Types of surfactants Assessment of the outcome		
Unit number-4	**Title:** Examination and assessment of the neonatal patients	**No. of hours-9**
Examination and assessment of the neonatal patients Gestational age and size assessment Physical examination of the neonate 104 Neurological assessment Pulmonary examination Non pulmonary examination Laboratory assessment Radiographic chest assessment		
Unit number-5	**Title:** Neonatal Ventilation	**No. of hours-9 hrs**
Non-Invasive Mechanical Ventilation of Newborns Continuous Positive airway pressure (CPAP) Non-invasive Positive pressure ventilation (NIPPV) Interfaces selection and fit Indications, contraindications and complications of NIV Physiological effects Monitoring the patient and ventilator circuit , **Invasive mechanical ventilation** of newborns Indications and contraindications of invasive ventilation Types of mechanical ventilation Modes of Ventilation Improvement of oxygenation and ventilation - adjustments of ventilator setting Weaning and Extubation , **Unconventional modes of Ventilation** High Frequency ventilation Nitric oxide therapy Extracorporeal membrane oxygenation		

Learning Experience:

1. Hands-on training sessions with neonatal manikins for resuscitation, CPAP, and ventilation techniques.
2. Case-based learning focused on neonatal disorders like RDS, TTN, MAS, and CHD.
3. Simulated scenarios for practicing scoring systems (APGAR, Ballard, Silverman-Anderson) and interpreting neonatal chest X-rays.
4. Skill labs and ICU exposure for monitoring techniques, ventilator settings, and invasive procedures.
5. Group discussions and peer teaching to enhance critical thinking and communication skills.

Textbooks:

1. **Manual of Neonatal Respiratory Care** – Steven M. Donn & Sunil K. Sinha.

Suggested Readings:

1. Textbook of Neonatal Resuscitation (NRP) – American Academy of Pediatrics (AAP).
2. Atlas of Neonatal Ventilation: A Case-Based Approach – Eduardo Bancalari.
3. Fundamentals of Pediatric Mechanical Ventilation – Amjad Zino.
4. Neonatal and Pediatric Respiratory Care – Brian K. Walsh.

Open Educational Resources (OER):

1. Neonatal Resuscitation & Thermoregulation: AAP Neonatal Resuscitation Program Resources - Online Medical Education | OPENPediatrics
2. Scoring & Assessment: https://litfl.com/clinical-score-collection/
3. Monitoring & Imaging: https://radiopaedia.org/
4. Neonatal Ventilation: https://www.openpediatrics.org/

Practical

SEMESTER II					
Course Code BPRTAR554	**Course Title** Respiratory Therapy - Advanced II	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major-IV Practical's				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisites	**Pre-Requisites-** Strong foundation in mechanical ventilation**,** arterial blood gas analysis**,** and critical care procedures **Co-Requisites-** Enrollment in or completion of Critical Care Pharmacology **or** Advanced Clinical Practice				

Course Perspective:

This course is designed to equip students with comprehensive **knowledge and hands-on skills** in the assessment, monitoring, resuscitation, and ventilatory management of neonates. Special focus is placed on **early detection, clinical decision-making,** and **evidence-based interventions** in the neonatal intensive care unit (NICU).

Course Outcomes:

CO1: Perform and assist in neonatal resuscitation, including appropriate use of PPV devices, medications, and resuscitation protocols.

CO2: Assess thermoregulation, scoring systems, and initial clinical assessment tools to evaluate neonatal condition and plan immediate interventions.

CO3: Operate and interpret NICU monitoring equipment, assess chest X-rays, and manage both invasive and non-invasive ventilation in neonates.

CO4: Demonstrate understanding and application of advanced and unconventional neonatal ventilation modalities, including high-frequency ventilation, inhaled nitric oxide, and ECMO.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Demonstrate initial steps of neonatal resuscitation including PPV, drug administration, and emergency meds	CO1
2	Assess thermal regulation; demonstrate techniques to prevent heat loss in neonates	CO2
3	Perform APGAR, Ballard, Down, and Silverman-Anderson scoring on case scenarios or manikins	CO3
4	Demonstrate setup and application of CPAP and Heated Humidified High Flow Nasal Cannula (HHHFNC)	CO3
5	Initiate and manage invasive ventilation in neonates, including weaning and extubation protocols	CO3
6.	Simulate and understand advanced strategies: HFOV setup, inhaled nitric oxide delivery, and ECMO overview	CO4

Open Educational Resources (OER):

- **Neonatal Resuscitation & Thermoregulation**: AAP Neonatal Resuscitation Program Resources Online Medical Education | OPENPediatrics
- **Scoring & Assessment: https://litfl.com/clinical-score-collection/**
- **Monitoring & Imaging: https://radiopaedia.org/**

SEMESTER V					
Course Code BPAH504	**Course Title** Advanced Intensive Care (BLS, ACLS, PALS & NALS)	**L**	**T**	**P**	**C**
Version	2025	**2**	**0**	**0**	**2**
Category of Course	Skill Enhancement Course –IV				
Total Contact Hours	30 HRS				
Pre-Requisites/ Co-Requisites	**Pre-Requisites -** Basic understanding of human anatomy and physiology**,** especially cardiovascular and respiratory systems **Co-Requisites-** Concurrent enrollment in clinical practicum **or** critical care rotation				

Course Perspective:

This course equips students with in-depth knowledge and practical skills necessary to manage critical cardiovascular and respiratory emergencies across the lifespan—from adult advanced cardiac life support (ACLS) to pediatric (PALS) and neonatal resuscitation (NRP). Emphasis is placed on recognizing life-threatening arrhythmias, managing advanced airways, pharmacologic interventions, defibrillation, and performing high-quality CPR through scenario-based training.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Apply the ACLS, PALS, and NRP algorithms in simulated and clinical scenarios.

CO2: Recognize cardiac rhythms and provide appropriate defibrillation and pacing interventions.

CO3: Perform advanced airway management procedures including intubation and cricothyrotomy.

CO4: Administer emergency medications with correct dosage, route, and timing in adults and children.

CO5: Execute effective paediatric and neonatal resuscitation including pharmacological and airway management.

Course Outline:

Unit number-1	**Title** : **Advanced Cardiac Life Support (ACLS) and Airway Management**	**No. of hours- 8 hrs**
ACLS algorithm and cardiac rhythm recognition, Advanced airway management (intubation, cricothyrotomy), Defibrillation and pacing: principles, techniques, pacemaker modes, Complications: aspiration, tube dislodgement, pacing issues		
Unit number-2	**Title**: **Pharmacology in Adult and Pediatric Resuscitation**	**No. of hours- 7 hrs**
ACLS medications: epinephrine, amiodarone, vasopressin, atropine, Indications, dosages, administration, mechanisms, and side effects , Drug calculations and ADR management, Paediatric pharmacology: pediatric drug doses, pharmacokinetics, common emergency drugs		
Unit number-3	**Title**: **Post-Arrest Care and Neurologic Assessment**	**No. of hours- 4 hrs**
Post-cardiac arrest care: sedation, targeted temperature management , Neurologic assessment: GCS, pupil response, neuroprognostication , Role of supportive care and temperature control in recovery		
Unit number-4	**Title: Paediatric Basic Life Support (PBLS)**	**No. of hours- 5 hrs**
PBLS algorithm , CPR for infants and children , AED use in paediatrics , Airway management in children		

Unit number-5	Title: Paediatric Advanced Life Support (PALS) and Neonatal Resuscitation	No. of hours-6 hrs
PALS algorithm and pediatric cardiac arrest management, Pediatric medications and monitoring , Neonatal Resuscitation Program (NRP): Apgar scoring, ventilation techniques, chest compressions, and neonatal drugs		

Learning Experience:

This course offers hands-on, simulation-based learning to prepare students for emergency scenarios involving adult, paediatric, and neonatal patients. Through a combination of theory, skill labs, and case-based discussions, students will master ACLS, PALS, PBLS, and NRP protocols. They will develop competence in advanced airway management, cardiac rhythm interpretation, pharmacologic interventions, defibrillation, and post-arrest care.

Textbooks:

- AHA ACLS , BLS Provider Manual

Suggested Readings:

- AHA Pediatric Advanced Life Support Provider Manual
- AHA NALS Guidelines

Open Educational Resources (OER):

- www.heart.org – AHA Guidelines
- www.nrpexam.org – Neonatal Resuscitation Program
- www.openpediatrics.org – Pediatric emergency learning
- YouTube channels: Laerdal Medical, AHA Training Video

Practical

SEMESTER II					
Course Code BPAH554	**Course Title** Advanced Intensive Care (BLS,ACLS, PALS & NALS)	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	SEC-IV Practical's				
Total Contact Hours	30 Hrs				
Pre-Requisites/Co-Requisites	**Pre-Requisites -** Basic understanding of **human anatomy and physiology**, especially cardiovascular and respiratory systems **Co-Requisites-** Students are encouraged to simultaneously study critical care, pharmacology, pediatric and neonatal care, and medical instrumentation for a more integrated and applied understanding of advanced life support techniques.				

Course Perspective:

This course equips students with advanced life-saving skills across adult, pediatric, and neonatal populations through high-fidelity simulation and clinical case management. It focuses on mastering ACLS, PALS, PBLS, and NRP algorithms, advanced airway techniques, pharmacologic interventions, cardiac monitoring, defibrillation, and post-resuscitation care. Emphasis is placed on clinical decision-making, team dynamics, and real-time emergency response.

Course Outcomes:

Upon completion of the course the learner will be able to:

- **CO1:** Apply ACLS algorithms in adult cardiac emergencies through simulated scenarios.
- **CO2:** Identify and interpret various ECG rhythms and integrate them into clinical decisions.
- **CO3:** Demonstrate proper airway management techniques including intubation and cricothyrotomy.
- **CO4:** Prepare and administer emergency medications accurately and manage their side effects.
- **CO5:** Operate defibrillators and external pacemakers and manage associated complications.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Simulated ACLS scenarios and ECG rhythm recognition	CO1 , CO2
2	Code blue response simulation and IV drug administration	CO1, CO4
3	Drug dose calculation and adverse drug management	CO4, CO3
4	Intubation, BVM ventilation, cricothyrotomy on manikins	CO3
5	Defibrillation and pacing techniques	CO3
6	Post-arrest care setup: sedation, temperature, GCS scoring	CO4
7	Pediatric CPR, AED, and airway management on infant/child manikins	CO5
8	PALS and NRP algorithm simulation	CO5, CO4

Open Educational Resources (OER):

1. **AHA CPR & ECC Guidelines 2020** – ACLS, PALS, BLS
   https://cpr.heart.org
2. **OpenPediatrics (Harvard & Boston Children's Hospital)**
   https://www.openpediatrics.org
3. **Laerdal Medical – Clinical Simulations & Tutorials**
   https://www.laerdal.com

4. **OpenWHO – Emergency and Critical Care**
   https://openwho.org
5. **Coursera ACLS/PALS/Pharmacology modules (free audit)**
   https://www.coursera.org

SEMESTER VI

SEMESTER VI					
Course Code BPRT601	**Course Title** Pulmonary Function Test	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-XII				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites-** Basic knowledge of human respiratory anatomy and physiology **Co-Requisites-** Enrollment in or completion of Respiratory Care Assessment *or* Clinical Respiratory Procedures				

Course Perspective:

This course provides in-depth knowledge and practical exposure to pulmonary function testing (PFT), focusing on the physiological principles, equipment operation, test performance, and interpretation of results. The course includes training in spirometry, diffusion studies, plethysmography, and gas exchange mechanisms to enhance diagnostic skills relevant to respiratory care.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Explain the types, classifications, and significance of various pulmonary function tests
CO2: Describe the structure and function of the pulmonary interstitium and blood-gas barrier
CO3: Perform and interpret spirometry, including peak expiratory flow rate
CO4: Operate diffusion testing equipment and interpret DLCO values
CO5: Demonstrate understanding and application of body plethysmography for lung volume assessment

Course Outline:

Unit number-1	**Title : Introduction to Pulmonary Function Testing**	**No. of hours- 10 hrs**

Types and Classification-Lung Volumes and Capacities , Pulmonary Interstitium, Blood Gas Barrier-Exchange of Gases Across Alveolar-Capillary Membrane ,Ventilation-Perfusion Mismatch		
Unit number-2	**Title**: **Spirometry**	**No. of hours- 10 hrs**
Fundamentals of spirometry, Spirometry maneuvers (FVC, FEV1, etc.) , Peak Expiratory Flow Rate (PEFR), Performing and observing quality criteria, Patient preparation and coaching		
Unit number-3	**Title: Spirometry Equipment and Interpretation**	**No. of hours-8 hrs**
Spirometry equipment operation and maintenance , Infection control in equipment use , Troubleshooting errors , Basic interpretation of results: obstructive vs. restrictive patterns		
Unit number-4	**Title: Diffusion Studies (DLCO)**	**No. of hours-9 hrs**
Basics of diffusion studies, Diffusing Capacity of Lungs for Carbon Monoxide (DLCO) including principle and procedure, DLCO equipment operation and maintenance, performing DLCO, and basic interpretation		
Unit number-5	**Title: Body Plethysmography**	**No. of hours- 8 hrs**
Basics of body plethysmography, lung volume testing, and body plethysmography equipment and basic operation		

Learning Experience:

1. Hands-on equipment exposure with real-time calibration and troubleshooting.
2. Interactive case discussions and simulations using spirometry, DLCO, and plethysmography data.
3. Problem-based learning focused on error identification and result interpretation.
4. Demonstration-based sessions on maintenance and QC of diagnostic tools.
5. Use of software tools for automated reporting and decision support in clinical scenarios

Textbooks:

1. "Pulmonary Function Testing: A Practical Approach" by Michael J. H. Bennett and Andrew M. D. Scott

Suggested Readings:

1. "Clinical Pulmonary Medicine" by Richard J. Dutton and David A. Schwartz
2. "Interpretation of Pulmonary Function Tests: A Practical Guide" by Thomas J. P. B. L. MacIntyre

Open Educational Resources (OER):

1. American Thoracic Society (ATS) guidelines for spirometry and DLCO
2. ERS e-learning modules
3. Video tutorials (e.g., YouTube – RT Channel, MedCra

Practical

SEMESTER VI					
Course Code BPRT651	**Course Title** Pulmonary Function Test	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major-XII Practical's				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisites	**Pre-Requisites-** Students should have a foundational understanding of human respiratory anatomy and physiology, especially lung mechanics and gas exchange. **Co-Requisites-** Students should concurrently study respiratory pathophysiology, medical instrumentation, and clinical diagnostics to effectively interpret pulmonary function tests in various disease conditions.				

Course Perspective:

This course equips students with technical expertise and analytical skills to perform, interpret, and troubleshoot pulmonary function tests. Emphasis is placed on standardized techniques**,** clinical application**,** and equipment handling as used in pulmonary diagnostics across outpatient, inpatient, and research settings.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Demonstrate the setup, calibration, and functional use of pulmonary function testing equipment.

CO2: Perform and interpret basic spirometry tests including FVC, FEV1, and FEV1/FVC ratio.

CO3: Accurately measure Peak Expiratory Flow Rate (PEFR) and assess patient effort and compliance.

CO4: Conduct and interpret advanced tests such as DLCO and body plethysmography.

CO5: Identify common artifacts, procedural errors, and apply corrective actions

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Demonstration and calibration of spirometers, DLCO systems, and body plethysmographs	CO1
2	Perform FVC, FEV1, and calculate FEV1/FVC ratio using computerized spirometry	CO2
3	Measure PEFR using handheld or computerized peak flow meters and assess reproducibility	CO3
4	Conduct DLCO test: Explain technique, patient prep, and interpret single-breath method results	CO4
5	Operate body plethysmography equipment and record lung volumes (TLC, RV, FRC)	CO4
6	Identify errors such as poor effort, leaks, and equipment artifacts; implement quality assurance measures	CO5
7	Perform routine maintenance and troubleshoot common PFT equipment faults	CO6
8	Generate reports and interpret findings for obstructive, restrictive, and mixed disorders in clinical cases	CO7

Open Educational Resources (OERs):

1. **ATS/ERS Pulmonary Function Standards and Interpretation Guidelines**
   🔗 https://www.thoracic.org
2. **Spirometry Training Video Series – NIOSH/CDC**
   🔗 https://www.cdc.gov/niosh/topics/spirometry/
3. **OpenPediatrics & OpenCriticalCare** – PFT & Ventilatory assessment concepts
   🔗 https://www.openpediatrics.org

SEMESTER VI					
Course Code BPRT602	**Course Title** Ventilator Management	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-XIII				
Total Contact Hours	45 hrs hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites -** Fundamental knowledge of respiratory anatomy and physiology **Co-Requisites-** Participation in a simulation-based lab or skill				

	development module related to mechanical ventilation

Course Perspective:

This course introduces the principles, monitoring, management, and complications associated with mechanical ventilation in clinical practice. Emphasis is placed on understanding ventilatory physiology, ventilator mechanics, waveform interpretation, patient monitoring, and evidence-based weaning protocols. It prepares students to critically assess ventilated patients and respond effectively to changes in clinical conditions.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Explain the fundamental principles of mechanical ventilation and ventilator modes
CO2: Operate and classify different types of mechanical ventilators and interpret ventilator waveforms
CO3: Assess patient status and perform effective monitoring during mechanical ventilation
CO4: Analyze the physiological effects of ventilator settings on major organ systems
CO5: Identify, prevent, and manage complications associated with mechanical ventilation

Course Outline:

Unit number-1	**Title : Mechanical ventilation – Basics**	**No. of hours- 9 hrs**
Principles of mechanical ventilation: airway resistance, lung compliance, dead space ventilation, ventilatory failure, oxygenation failure, clinical conditions leading to mechanical ventilation, operating modes of mechanical ventilation. ,Mechanical Ventilators: Classification, working principles, drive mechanism, control circuits, control variables, phase variables, output, waveform, alarm system, Basic ventilator waveform analysis		
Unit number-2	**Title**: **Mechanical ventilation – Monitoring**	**No. of hours- 9 hrs**
Concepts of monitoring, vital signs, chest inspection and auscultation, fluid electrolyte balance, arterial blood gases, oxygen and end tidal carbon dioxide monitoring.		
Unit number-3	**Title: Effects of Mechanical ventilation**	**No. of hours-9 hrs**
Effects of various ventilator settings on ventilation and oxygenation. Effect of PEEP: pulmonary considerations, effects on the cardiovascular system, hemodynamics, renal & neurological considerations.		
Unit number-4	**Title: Mechanical ventilation - Complications, weaning and Clinical situations**	**No. of hours- 9 hrs**
Weaning from mechanical ventilation: weaning and its failure, weaning criteria and indices, weaning procedure, signs, causes of weaning failure.		
Unit number-5	**Case Studies**	**No. of hours- 9**

Case studies and ventilator management in differential diagnosis

Learning Experience:

1. Hands-on training with mechanical ventilators and test lungs.
2. Simulation of ventilator settings and alarm scenarios.
3. Case-based discussions on respiratory failure and ventilatory strategies.
4. Interpretation of ABG, waveforms, and monitoring data.
5. Assignments focused on PEEP effects, monitoring, and weaning protocols.
6. Demonstration of ventilator modes, circuits, and troubleshooting.
7. ICU observations of real-time ventilator management.

Textbooks:

"Ventilator Management: A Clinical Guide" by William F. Hager and Steven R. Simpson

Suggested Readings:

1. "Clinical Manual of Emergency Pediatrics" by Michael Cabana and Dennis W. D'Angelo
2. "Mechanical Ventilation: Physiological and Clinical Applications" by George N. K. D. D. L. R. B. Orton
3. "Principles and Practice of Mechanical Ventilation" by Martin J. Tobin

Open Educational Resources (OER):

1. OpenPediatrics.org
2. [YouTube RT Simulations and Case Demos]
3. NBRC Clinical Simulation Labs (virtual)
4. ERS/ATS Ventilation Guidelines

Course Code BPRTVM652	**Course Title** Ventilator Management	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major –XIII Practical's				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisites	**Pre-Requisites -** Fundamental knowledge of respiratory anatomy and physiology **Co-Requisites-** Participation in a simulation-based lab or skill development module related to mechanical ventilation				

Course Perspective:

This course emphasizes the practical application of mechanical ventilation concepts, from equipment handling to waveform analysis, ABG interpretation, and bronchoscopy assistance. Students will gain competency in ventilator setup, monitoring, and troubleshooting, which are essential for real-world critical care practice.

Course Outcomes:

Upon completion of the course the learner will be able to:

- **CO1:** Operate mechanical ventilators and non-invasive ventilation (NIV) devices effectively.
- **CO2:** Analyze and interpret ventilator waveforms (pressure, flow, volume).
- **CO3:** Demonstrate ventilator adjustments and simulate lung mechanics using a test lung.
- **CO4:** Assess and correct acid-base, ABG, and electrolyte disturbances in ventilated patients.
- **CO5:** Recognize and respond to alarms and complications in mechanical ventilation.

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Operation and initial setting of invasive and non-invasive ventilators	CO1
2	Ventilator waveform analysis: Pressure-Volume and Flow-Time curves	CO2
3	Adjusting ventilator settings using a test lung simulation	CO3
4	Interpretation of ABG, electrolyte, and acid-base results with correction strategies	CO4
5	Simulated response to ventilator alarms and clinical complications	CO5
6	Assisting bronchoscopy: preparation, monitoring, and post-procedure care	CO5
7	Setting appropriate PEEP and evaluating its effect on lung compliance	CO4
8	Routine maintenance and troubleshooting of ventilators and monitors	CO4

Open Educational Resources (OER):

1. **OpenCriticalCare.org** – Free simulations and ventilator troubleshooting tools
   https://www.opencriticalcare.org
2. **OpenPediatrics Ventilator Simulator** – Practice waveform interpretation
   🔗 https://www.openpediatrics.org
3. **Life in the Fast Lane (LITFL)** – ABG interpretation tutorials and quizzes
   🔗 https://litfl.com/abg-interpretation/

SEMESTER VI					
Course Code BPRT603	**Course Title** Life Support System	**L**	**T**	**P**	**C**
Version	2025	**3**	**1**	**0**	**4**
Category of Course	Major-XIV				
Total Contact Hours	60				

Pre-Requisites/ Co-Requisites	**Pre-Requisites -** Prior knowledge of **Basic Life Support (BLS)** principles and patient assessment skills **Co-Requisites -** Participation in clinical or simulation-based training in critical care or ICU settings

Course Perspective:

This course introduces students to the fundamental principles, technologies, and practices involved in life support systems in critical care settings such as ICU, NICU, and emergency departments. Emphasis is placed on the role of respiratory therapists in operating and managing respiratory and cardiovascular life support equipment, patient monitoring systems, and ensuring safety and effectiveness of care.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Describe the scope and importance of life support systems in critical care.

CO2: Operate ventilators, CPAP/BiPAP systems, and oxygen delivery devices in clinical practice.

CO3: Demonstrate airway management, tracheostomy care, and CPR techniques.

CO4: Monitor patients using ECG, pulse oximeters, capnography, and interpret alarms.

CO5: Apply principles of equipment cleaning, calibration, and patient safety..

Course Outline:

Unit number-1	**Title** : **Introduction to Life Support**	**No. of hours- 8 hrs**
What is life support? ,Role of respiratory therapists in ICU/ER BLS vs ALS ,Overview of critical care environments (ICU, NICU, Emergency)		
Unit number-2	**Title**: **Respiratory Life Support**	**No. of hours- 14 hrs**
Ventilators: types, modes, indications ,CPAP and BiPAP systems ,Oxygen therapy: masks, nasal cannulas, concentrators Airway management: intubation basics, tracheostomy care		
Unit number-3	**Title: Cardiovascular Support**	**No. of hours- 10 hrs**
CPR techniques and procedures , Defibrillators: AEDs and manual defibrillation ,Basic function of pacemakers ,Monitoring heart rate and blood pressure		
Unit number-4	**Title: Patient Monitoring Systems**	**No. of hours- 10 hrs**

Pulse oximetry and oxygen saturation ,ECG monitoring basics ,Capnography (ETCO2Alarms: types, responses, and safety		
Unit number-5	**Title: Equipment Maintenance and Safety**	**No. of hours-8 hrs**
Cleaning and disinfection of respiratory equipment ,Routine checks and calibration ,Electrical and patient safety Power backups and battery management		

Learning Experience:

- Students will gain a foundational understanding of life support systems and the role of respiratory therapists in critical care settings.
- Learners will develop skills in operating and managing respiratory support equipment including ventilators, CPAP/BiPAP, and oxygen delivery systems.
- Students will be trained in providing cardiovascular support through CPR, defibrillation, pacemaker basics, and vital sign monitoring.
- Learners will explore patient monitoring tools such as ECG, pulse oximetry, and capnography to ensure timely clinical interventions

Textbooks:

1. **Shelledy, D. C., & Peters, J. I.** – *Respiratory Care: Principles and Practice*

2. **Egan's Fundamentals of Respiratory Care** – Kacmarek, Stoller, Heuer

Suggested Readings:

1. **AARC Clinical Practice Guidelines** – American Association for Respiratory Care

2. **Basic Life Support Provider Manual** – American Heart Association (AHA)

3. **User Manuals** of ventilators and life support devices (e.g., Dräger, Philips, GE

Open Educational Resources (OER):

1. AARC (American Association for Respiratory Care)
2. ERS e-learning
3. OpenPediatrics.org

Practical

SEMESTER VI					
Course Code BPRTLS653	**Course Title** Life Support System	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Major – XIV Practical's				
Total Contact Hours	30				
Pre-Requisites/Co-Requisites	**Pre-Requisites -** Prior knowledge of **Basic Life Support (BLS)** principles and patient assessment skills **Co-Requisites -** Participation in clinical or simulation-based training in critical care or ICU settings				

Course Perspective:

This course introduces students to core life support systems and patient monitoring tools in critical care settings. Through hands-on practice and simulations, learners develop competence in airway management, oxygen delivery, ventilator usage, CPR, and safe handling of ICU equipment—essential for Respiratory Therapy roles in ICUs, NICUs, and emergency rooms.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO1: Perform Basic Life Support (BLS) including chest compressions and rescue breaths.

CO2: Operate ventilators, change modes, and interpret alarms.

CO3: Demonstrate the use of oxygen delivery systems (cylinders, concentrators, masks).

CO4: Set up and operate CPAP/BiPAP machines for respiratory support.

CO5: Simulate basic airway management including intubation

Practical Outline:

S.No	Lab Task	Mapped CO/COs
1	Hands-on practice of BLS techniques using mannequins	CO1
2	Ventilator setup, mode change, and alarm handling	CO2
3	Demonstration and use of oxygen delivery systems	CO3
4	Operating CPAP and BiPAP machines in simulated settings	CO4
5	Simulation of airway intubation procedures	CO5
6	ECG and pulse oximeter operation and patient data interpretation	CO3
7	Alarm types, causes, and appropriate responses in ICU equipment	CO4
8	Cleaning, disinfection, and safety checks of respiratory devices	CO5

Open Educational Resources (OER):

🎬 **AHA BLS eLearning Modules**
🔗 https://elearning.heart.org

🎬 **OpenCriticalCare.org – Ventilator Simulator**
🔗 https://www.opencriticalcare.org

🎬 **LearnCPR.org – Free CPR Practice Guides**
🔗 https://www.learncpr.org

🎬 **LITFL (Life in the Fast Lane)** – ECG Library & Monitoring Basics
🔗 https://litfl.com

SEMESTER VI					
Course Code BPAH604	**Course Title** Hospital Administration	**L**	**T**	**P**	**C**
Version	2025	**3**	**0**	**0**	**3**
Category of Course	Minor-V				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites -** Basic understanding of human biology, healthcare systems, and communication skill **Co-Requisites: -** Simultaneous enrolment in allied subjects such as Medical Ethics, Healthcare Laws, or Public Health Administration is recommended to provide contextual support.				

Course Perspective:

To equip students with the knowledge and skills required to effectively manage hospital operations, including administration, finance, human resources, and information systems, to ensure efficient and high-quality healthcare delivery.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand the structure and functioning of hospitals and the role of hospital administrators in healthcare delivery.
CO 2: Interpret and apply healthcare policies, legal regulations, and ethical frameworks in hospital settings.
CO 3: Demonstrate knowledge of financial and human resource management practices within healthcare institutions.
CO 4: Apply quality improvement methodologies and understand the integration of IT solutions for efficient hospital operations.

Course Outline:

Unit number-1	Tittle: Introduction to Hospital Management	No. of hours-9
Definition, departments, types of hospital, hierarchy, roles and responsibilities of hospital administrators. hospital administration in healthcare delivery.		
Unit number-2	**Tittle: Healthcare Policies and Regulations**	**No. of hours-9**
Introduction, compliance requirements (e.g., accreditation, licensing). Ethical considerations in healthcare management.		
Unit number-3	**Tittle: Financial Management in Healthcare**	**No. of hours-9**
financial management in healthcare organizations, Budgeting, revenue cycle management, and financial reporting. Cost containment strategies in healthcare.		
Unit number-4	**Tittle: Quality Improvement and Patient Safety**	**No. of hours-9**
Methodologies of quality improvement in healthcare. **Patient safety:** Initiatives and adverse event reporting systems. Implementing quality improvement projects in hospitals. **NABH:** Introduction, definition, 5 Patient chapter, 5 hospital Staff chapters.		
Unit number-5	**Tittle: Information Technology in Healthcare**	**No. of hours-9**
Introduction: Role of information technology in healthcare administration. **Electronic health records (EHRs):** implementation and interoperability, Data security and privacy in healthcare IT systems.		

Learning Experience:

1: Learners explore hospital infrastructure and administrative workflow through diagrams and role-play scenarios.

2: Case discussions on healthcare policies, ethical dilemmas, and regulatory compliance are integrated.

3: Students participate in budget simulation exercises and cost analysis based on sample hospital data.

4: Interactive HR management activities including mock recruitment interviews and performance review simulations.

5: Learners conduct a mock quality improvement project and simulate a patient safety incident analysis

Textbooks:

1. Hospital Administration: Principles and Practice" by Paul A. Kuehnert and Jerry A. D. B. Smith

Suggested Readings:

1. Introduction to Healthcare Management" by Sharon B. Buchbinder and Nancy H. Shanks
2. The Well-Managed Healthcare Organization" by Lloyd F. Novick, Robert A. McClean, and William A. Sollecito
3. Healthcare Operations Management" by Daniel B. McLaughlin and Julie M. Hays

Open Educational Resources (OER):

1. **eGyanKosh (IGNOU) – Hospital Administration Course Material**
   Link: https://egyankosh.ac.in
2. **World Health Organization (WHO) - Health Systems Governance**
   Link: https://www.who.int/teams/integrated-health-services

Practical

SEMESTER VI					
Course Code BPAH654	**Course Title** Hospital Administration	**L**	**T**	**P**	**C**
Version	2025	**0**	**0**	**2**	**1**
Category of Course	Minor V Practical's				
Total Contact Hours	30 hrs				
Pre-Requisites/Co-Requisites	**Pre-Requisites -** Foundational knowledge of public health or healthcare management principles **Co-Requisites** Simultaneous enrollment in courses such as Healthcare Policy & Regulations, Human Resource Management, *or* Financial Management in Healthcare is recommended for applied understanding.				

Course Perspective:

This course provides students with practical exposure to hospital administration functions including planning, staffing, quality control, budgeting, patient services, and legal compliance. Emphasis is placed on real-time decision-making, problem-solving in healthcare environments, and developing managerial competencies.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Understand and apply hospital organizational structures and administrative functions.

CO 2: Demonstrate knowledge of healthcare laws, regulations, and accreditation standards.

CO 3: Manage healthcare personnel, schedules, and evaluate HR performance systems.

CO 4: Apply basic financial, IT, and quality assurance principles to hospital administration.

Practical Outline:

S.No	**Lab Task**	**Mapped CO/COs**
1	Identify organizational structure and create a hospital departmental chart	CO1
2	Role-play: hospital administrator in OPD/IPD management	CO2

3	Prepare a sample HR hiring and orientation checklist	CO3
4	Create a duty roster for a hospital nursing unit	CO3
5	Prepare a budget proposal for a new OPD department	CO4
6	Evaluate a case study on hospital-acquired infection control protocols	CO2,CO4

Open Educational Resources (OER):

- **IGNOU eGyanKosh:** Hospital Management Modules – https://egyankosh.ac.in
- **National Health Mission – India:** Resources on HR, public health management – https://nhm.gov.in
- **NABH Official Website:** Guidelines and audit forms – https://www.nabh.co
- **World Health Organization (WHO):** Hospital preparedness and quality care tools – https://www.who.int

SEMESTER VI					
Course Code BPAH605	**Course Title** **Research Methodology & Biostatistics**	**L**	**T**	**P**	**C**
Version	2025	**3**	**0**	**0**	**3**
Category of Course	Minor VI				
Total Contact Hours	45 hrs				
Pre-Requisites/ Co-Requisites	**Pre-Requisites -** Basic understanding of healthcare systems and clinical terminology **Co-Requisites -** Suggested parallel study of courses like Epidemiology, Health Informatics, or Evidence-Based Practice				

Course Perspective:

This course introduces students to the fundamental principles of research methodologies and the ethical frameworks within which healthcare research is conducted. It aims to equip learners with the skills to identify and formulate research problems, understand biostatistical data, and utilize appropriate digital tools for research documentation and literature management.

Course Outcomes:

Upon completion of the course the learner will be able to:

CO 1: Describe basic research concepts, methodologies, and problem identification strategies in healthcare research.

CO 2: Apply ethical principles and navigate institutional protocols including ethical committee approvals for clinical research.

CO 3: Demonstrate foundational knowledge of biostatistics for data analysis and interpretation in research.

CO 4: Utilize advanced digital tools and software for effective research management, proposal writing, and plagiarism control.

Course Outline:

Unit number-1	**Title - Basics of Research**	**No. of hours- 8**
Introduction to research methods, identifying research problem, How this research differ from other experimental research, and exploratory research.		
Unit number-2	**Title**: **Ethics**	**No. of hours-9**
Ethical issues in research, Research design, Ethics of clinical trials, permission of ethical committee, social ethics.		
Unit number-3	**Title: Biostatics**	**No. of hours-13**
Basic concepts of biostatistics, types of data, research tools, data collection methods, need of biostatistics, understanding of data, sources of relevant data, relation between data and variables, types of variables, defining data sets, sampling methods, probability rules, normal and binomial distributions, data collection through sampling, population and sample, concept of normality, data summarization, understanding statistical analysis, measures of central tendency and dispersion, data presentation (tables, charts, graphs), frequency distribution, graphical interpretation, hypothesis, significance levels, p-value, type I and II errors, confidence intervals, applications of biostatistics in health sciences.		
Unit number-4	**Title:Counselling in Diverse Settings**	**No. of hours- 7**
Developing a research proposal-Models by engaging patients' information and data-base of the diagnostic approaches		
Unit number-5	**Title: : Use of Advanced Search Tools**	**No. of hours-8**
Management Software like Zotero/Mendeley, Software for paper formatting like LaTeX/MS Office, Software for detection of Plagiarism		

Learning Experience:

- **Interactive Lectures & Workshops** on research design, ethics protocols, and proposal writing
- **Group Discussions** and **case analysis** on clinical trial controversies and data misuse
- **Hands-on Practice** with Zotero, LaTeX, plagiarism checkers
- **Mini Research Projects** for sampling and statistical data interpretation
- **Simulated IRB Review Panels** to understand ethical submission processes

Textbooks:

1. Introduction to Biostatistics and Research Methods By Sundar Rao

Suggested Readings:

1. Biostatistics & Research Methodology By Dr.Ashok A.Hajare
2. Biostatistics & Research Methodology By Dr.Chandrakant R.Kokare
3. Research Methodology – Methods | Techniques | Practices By Rabi Narayan Subudhi, Sumita Mishra, Malabika Sahoo

Open Educational Resources (OERs):

- **ICMR Ethical Guidelines:** https://ethics.ncdirindia.org
- **Coursera - Research Methodologies:** Free healthcare research modules
- **Khan Academy – Biostatistics and Probability**
- **PubMed & Google Scholar:** Literature review and citation
- **Zotero Official Guide:** https://www.zotero.org/support