

THE APOLLO UNIVERSITY

DIVISION OF ALLIED HEALTH SCIENCES

SCHOOL OF HEALTH SCIENCES

COURSE STRUCTURE & SYLLABI

(B.Sc. RESPIRATORY THERAPY TECHNOLOGY)

FOR 2023, 2024 & 2025 ADMITTED BATCH



A DIVISION OF AHERF



VISION

The Apollo University aspires to create knowledge, thought leadership, and global leaders for the future, preparing them for a constantly evolving world and empowering them to build a healthier and more equitable society.

MISSION

The Mission is to achieve this vision through transformative education, developed at the intersection of healthcare, science, technology, and management, having roots in innovation & research, in an inclusive culture that fosters practical oriented knowledge, stimulates critical thinking and sustains our legacy of pioneering and excellence, for the benefit of humanity.

PROGRAM OUTCOMES (PO)

PO 1: Clinical Proficiency: Demonstrate the ability to perform all necessary respiratory care procedures, including but not limited to, oxygen therapy, aerosol medication delivery, bronchopulmonary hygiene, and mechanical ventilation. Assess and monitor patients' cardiopulmonary health, including the use of diagnostic tools such as pulmonary function tests and blood gas analysis.

PO 2: Critical Thinking and Decision Making: Apply critical thinking skills to evaluate clinical information and make informed decisions regarding patient care. Develop, implement, and modify respiratory care plans based on patient assessments and evidence-based practices.

PO 3: Effective Communication: Communicate effectively with patients, families, and members of the healthcare team. Document all aspects of patient care accurately and thoroughly in the medical record.

PO 4: Professionalism and Ethics: Demonstrate professionalism, including adherence to ethical principles, in all interactions with patients, families, and healthcare team members. Understand and apply legal and regulatory standards pertinent to respiratory therapy practice.

PO 5: Patient Education and Advocacy: Provide education to patients and their families about respiratory conditions, treatments, and preventive health practices. Advocate for the needs and rights of patients within the healthcare system.

PO 6: Technological Competence: Use and maintain respiratory care equipment and technology efficiently. Stay current with advancements in respiratory care technology and integrate new tools and practices into patient care.

PO 7: Interdisciplinary Collaboration: Work collaboratively with other healthcare professionals to ensure comprehensive patient care. Participate effectively in multidisciplinary healthcare teams.

PO 8: Quality Improvement and Evidence-Based Practice: Participate in quality improvement initiatives aimed at enhancing patient care and safety. Integrate evidence-based guidelines and research findings into clinical practice.

PO 9: Lifelong Learning and Professional Development: Engage in continuing education and professional development opportunities to stay current in the field of respiratory therapy. Demonstrate a commitment to lifelong learning and self-improvement.

PO 10: Leadership and Management: Exhibit leadership skills in clinical settings, including mentoring and supervising other respiratory therapists and healthcare team members. Understand the principles of healthcare management and apply them to improve respiratory care services.

PROGRAM EDUCATIONAL OBJECTIVES (PEO):

PEO1: Patient Assessment Skills: Graduates should be able to effectively assess respiratory health by conducting thorough patient evaluations, including physical examinations and diagnostic testing interpretation.

PEO 2: Treatment Planning and Implementation: Graduates should be proficient in developing comprehensive respiratory care plans tailored to individual patient needs and executing those plans effectively.

PEO 3: Respiratory Intervention Proficiency: Graduates should demonstrate competence in performing a variety of respiratory interventions, including oxygen therapy, aerosolized medication administration, mechanical ventilation management, and airway clearance techniques.

PEO 4: Critical Thinking and Problem-Solving: Graduates should be capable of critically analysing complex respiratory issues, identifying potential problems, and applying appropriate interventions to address them effectively.

PEO 5: Knowledge Base: Graduates will demonstrate a comprehensive understanding of respiratory anatomy, physiology, pathophysiology, and pharmacology as it relates to respiratory care.

PEO 6: Clinical Skills: Graduates will possess the necessary clinical skills to assess, diagnose, and treat patients with respiratory disorders across the lifespan, including performing diagnostic tests, administering medications, and managing mechanical ventilation.

PROGRAM SPECIFIC OUTCOMES (PSO):

After successful completion of the program the graduates will be able to:

PSO 1: Therapeutic Procedures: Proficiency in administering respiratory therapy treatments, including oxygen therapy, aerosol medication delivery, and chest physiotherapy.

PSO 2: Diagnostic Procedures: Proficiency in assessing and interpreting Respiratory diseases and disorders

PSO 3: Mechanical Ventilation and Polysomnography : Skill in managing and troubleshooting mechanical ventilation systems and sleep study assessment.

PSO 4: Emergency Response: Preparedness to respond to respiratory emergencies with appropriate interventions.

PSO 5: Pulmonary Rehabilitation: Proficiency in administering pulmonary rehabilitation for various pulmonary pathological condition.

PSO 6: Ethical Practice: Understanding and adherence to ethical standards and professional conduct in respiratory care.

THE APOLLO UNIVERSITY

ACADEMIC REGULATIONS

SCOPE:

This Academic regulation provide a framework for the regulatory guidelines of all programs offered by The Apollo University. It includes procedures and practices that are to be followed to ensure academic standards in the University. The regulations are approved by the Academic Council. These regulations may be amended from time to time with the approval of the Academic council for the benefit of students or some times to reflect the changes suggested by the statutory bodies.

Information regarding amendments (if any) to the regulations will be communicated to the students by publishing in the University website. Students must follow the amended regulations as they might impact the process for the award of degree. The decision of the Vice Chancellor shall be the final in case of any discrepancy. These regulations apply to all students, despite the program of study.

1. ADMISSION INTO THE PROGRAM

The University admits the students in two modes. One through the convenor quota as per the Andhra Pradesh Private Universities Act, for which the admissions will be carried out through the convener quota by the Govt of Andhra Pradesh. The other is through University quota for which the following procedure will be followed:

- A. The applicant shall satisfy the entrance requirements specified by The Apollo University and in accordance with guidelines of statutory councils for Under-graduation.
- B. The Applicant shall be qualified in the qualifying examination for a particular program.
- C. The Applicant secures a rank in national level entrance exam or suitable such test conducted by The Apollo University / professional body.
- D. The Applicant qualifies in the specified state or national level examinations prescribed by The Apollo University.

The Apollo University will widely notify the counselling schedule for admissions into the academic programs in the media. The provisional admission will be given to the eligible students during the counselling scheduled by Apollo University. The selected candidates will be provisionally admitted into the program of his/her choice if the candidate meets the program specific requirements in addition to academic performance qualifying

exam. Admission is purely based on merit and so merely meeting the requirements will not ensure admission. The University does not discriminate based on gender, race, region, religion, disability or nationality. The University reserves the right to make admissions based on various criteria which is specified in the admission brochure.

2. ELIGIBILITY CRITERIA

Undergraduate programs

The qualifying exam eligibility for each program is given Annexure 1. The student should have passed the qualifying exam either in the year the student is seeking admission or the previous year.

Convener Quota: The student seeking admission to any program under convener quota shall qualify in the relevant entrance exam conducted by the Government of Andhra Pradesh.

University Quota: For getting admission under University quota, percentage of marks obtained in the qualifying exam, the rank obtained in TAU entrance exam or any recognized national level examination in the year of admission will be considered.

Counselling

All the eligible students need to apply for admission and have to attend counselling conducted by TAU as per the schedule for the university quota.

3. PROGRAMS

The Apollo University offers variety of programs which includes certificate, undergraduate, postgraduate, and Research. The list of programs on offer for the academic year 2023-24 are annexed in Annexure 2.

Minimum duration of the program

The minimum duration of each program depends on the type of program, viz., undergraduate, postgraduate, integrated programs, etc., and the faculty which offers the program. The maximum duration of the program is N+2 years, where N stands for the minimum duration of the program as mentioned in Annexure 2 and 3. If the student has not obtained the minimum number of credits within the stipulated time, the Vice-Chancellor may extend the maximum duration in extenuating circumstances upon receiving a request along with reasons from the student for not completing the program on time.

4. CHOICE BASED CREDIT SYSTEM

The choice-based credit system (CBCS) facilitates the education student-centric. It provides the opportunity for the learner to choose the courses from a basket of core, elective, and skill enhanced courses. All programs of study are designed to meet the specified number of credit requirements. The courses taken by the student in each semester as part of program are allotted some credit points based on the number of hours assigned. Upon successful completion of the course, the student secures the number of credits allotted for that course. Once the minimum number of credits of the program is achieved, the degree can be awarded, subject to fulfilment of all other relevant conditions.

5. STRUCTURE OF THE PROGRAM

The Program structure Consists of

- i) University Courses
 - A. University Core
 - B. University Electives
- ii) Faculty Courses
 - A. Faculty Core
 - B. Faculty Electives
- iii) Program Courses
 - A. Program Core
 - B. Program electives

Each course* is assigned a certain number of credits depending upon the number of contact hours (lectures/tutorials/practical) per week. (*one course means one subject)

Core Courses = 3 Credits /4 Credits

Elective =3 Credits

In general, credits are assigned to the courses as detailed below:

- **A classroom lecture/ tutorial of 60 min (1 hr) duration per week, spread over the entire semester, shall be considered as one credit.**
- **A laboratory session of minimum of 120 min (2 hr) per week shall be considered as one credit.**
- **A project work/ Internship session of 60 minutes (1 hr) carried out per week shall be considered as one credit.**

6. MEDIUM OF INSTRUCTION

The medium of instruction (including examinations and project reports) shall be English.

7. REGISTRATION

Any of the following student must register for the courses opted in a particular semester during the scheduled registration period.

- i. a new student who enrolls into any program
- ii. an existing student who is continuing on rolls from the preceding regular semester
- iii. a former student, i.e., who has not enrolled in the preceding regular semester or who has availed academic break or detained and got readmission

Each newly admitted student shall attend an induction/ orientation program prior to commencement of the first semester. During this program academic advisors assist the students in choosing the courses. Existing student may register online by using their registration number and mail ID through the Apollo ERP portal. Class schedules are available approximately two weeks before the beginning of every semester for each program. The concerned head of the department must approve class schedule.

8. ATTENDANCE REQUIREMENTS

- Students should earn a minimum of 80% attendance in the current semester to become eligible to write the Semester End Examinations.
- The monthly statement of attendance will be displayed on the Department Notice Board/ Apollo ERP by the respective departments within the first five working days of the following month.
- Candidates who are falling short of 80% attendance will be detained on the recommendation of the HoD and are not eligible to appear for the current semester examinations. The students who are detained in the current semester will not be allowed to register for the next semester and they have to repeat the same semester by paying the tuition fee prescribed. However, they can write arrear subjects, if any.

9. EVALUATION

The assessment of the student's performance in a Theory course shall be based on two components: Continuous Evaluation (40 marks) and Semester-end examination (60 marks). A student has to secure an aggregate of 40% in the course in the two components put together to be declared to have passed the course, subject to the condition that the candidate must have secured a minimum of 24 marks (i.e. 40%) in the theory component at the semester-end examination. Clinical Skill/Practical/ Project Work/ Industrial Training/ Viva voce/ Seminar etc. are completely assessed as Continuous Evaluation (80 marks) and Semester-end examination (20 marks) put together a maximum of 100 marks, and a student has to obtain a minimum of 50% to secure Pass Grade. For courses having both theory and practical components, 60% of the weightage will be given for theory component and 40% weightage for practical component. The student must secure 40% (Theory + Practical) with 24 marks minimum in theory to attain pass grade.

Details of Assessment Procedure are furnished below in Table 1.

Table 1: Assessment Procedure

S. No.	Component of Assessment	Marks Allotted	Type of Assessment	Scheme of Evaluation
1	Theory	40	Continuous Evaluation	i) Twenty (20) marks for mid examinations. Three mid examinations shall be conducted for 20 marks each; average of the best two performances shall be taken into consideration. ii) Ten (10) marks for Quizzes, Assignments and Presentations. iii) Ten (10) marks for periodic evaluation, case studies and projects
		60	Semester-end Examination	iv) Sixty (60) marks for Semester-end examinations
	Total	100		

2	Laboratory	100	Continuous Evaluation	1)80 marks with equal weightage to all experiments subject to conduct of minimum of 10 experiments 2)20 marks for the end exam (with one of our university teachers as external other than course teacher)
3	Internship	100	Continuous Evaluation	i) (80) marks for periodic evaluation of Internship report by the Project Supervisor. ii) Twenty (20) marks for final Report presentation and Viva-voce, by a panel of internal examiners. iii) Students shall undergo TWO internships during the course of time and the evaluation shall be done during final semester.
4	Project work	100	Continuous Evaluation	iv) (80) marks for periodic evaluation and technical report writing by the Project Supervisor. ii) Twenty (20) marks for final Report presentation and Viva-voce, by a panel of internal examiners

GRADING SYSTEM

Based on the student performance during a given semester, a final letter grade will be awarded at the end of the semester in each course. The letter grades and the corresponding grade points are as given in Table 2.

Table 2: Grades & Grade Points

Sl. No.	Grade	Grade Points	Absolute Marks
1	O(Outstanding)	10	90 and above
2	A+(Excellent)	9	80 to 89
3	A (Very Good)	8	70 to 79
4	B+(Good)	7	60 to 69

5	B (Above Average)	6	50 to 59
6	C(Average)	5	45 to 49
7	P(Pass)	4	40 to 44
8	F(Fail)	0	Less than 40
9	Ab. (Absent)	0	-

SEMESTER GRADEPOINT AVERAGE (SGPA)

A Semester Grade Point Average (SGPA) for the semester will be calculated according to the formula:

$$SGPA = \frac{\sum [C \times G]}{\sum C}$$

Where

C = Number of credits for the course,

G = Grade points obtained by the student in the course.

A student who earns a minimum of 4 grade points (P grade) in a course is declared to have successfully completed the course, and is deemed to have earned the credits assigned to that course.

CUMULATIVE GRADE POINT AVERAGE (CGPA)

A similar formula is used to arrive at Cumulative Grade Point Average (CGPA), considering the student's performance in all the courses taken in all the semesters up to the particular point of time.

Table 3 shows the CGPA required for the award of class after the successful completion of the program.

Table3: CGPA required for award of Class

Class	CGPA Required
First Class with Distinction	≥8.0*
First Class	≥6.5
Second Class	≥5.5
Pass Class	≥5.0

*In addition to the required CGPA of 8.0 or more, the student must have necessarily passed all the courses of every semester in first attempt.

11. REAPPEARANCE

- a. A student who has secured 'F' grade in a Theory course shall have to reappear at the subsequent Semester end examination held for that course.
- b. A student who has secured 'F' grade in a Practical course shall have to attend Special Instruction Classes scheduled by the Department for securing pass.
- c. A student who has secured 'F' Grade in Internship /Project work / Industrial Training etc shall have to reappear for Viva – voce scheduled by the department.
- d. A student who is declared fail (F) in a course/s can apply for revaluation within one week from the date of publication of results with a fee prescribed by the university. The marks /grade awarded in the revaluation is final.

11.1 PROCEDURE FOR REVALUATION

- The students who have not satisfied with the marks awarded by the examiner can apply for revaluation of his/her answer script/s
- The students have to apply through proper channel for revaluation and to pay the revaluation fee per paper to the university towards revaluation fee.
- Students have to apply for revaluation within 7 days from the date publication of result.
- The scripts will get valued by second examiner and if the difference is more than 15 marks, they will get valued by the third examiner. The average of the nearest two marks will be declared as the final marks.

11.2 ASSESSMENT MECHANISM

The Apollo University offers a student the benefits of Choice Based Credit System. Every paper is allotted a certain number of credits as per the UGC norms. A student is awarded the specified credits on obtaining a pass in the respective paper.

The Choice Based Credit System (CBCS) has been adopted for UG Course from the year 2021-22 onwards as per the recommendations of the A.P. State Council for Higher Education (APSCHE). The structure of undergraduate programmes provides a wide range of choice for students to opt for courses based on their eligibility, aptitude and career goals.

11.3 SEMESTER END EXAMINATION

The End semester examination will be a comprehensive examination of 3 hours duration. Two End Semester examinations are conducted in a year-

Odd semester examinations in November/ December and

Even semester examination in May/June

Practical examination / Project viva will be held 2 weeks prior to the theory semester end examinations.

Under-Graduation Programs

Course	Continuous Assessment	End semester	Aggregate in End semester Examinations
All UG Courses	No passing minimum	40%	40%

11.4 POST EVALUATION PROGRAMME:

Under the Post Evaluation Programme there are three menus:

- Provision for improvement
- Re-totalling and Revaluation of answer scripts
- Restrictions to appear for the examinations

11.5 PROVISION FOR IMPROVEMENT:

A student who passes a paper in the first attempt can reappear for the same paper in the succeeding End-of-Semester examination only, for improving his/her marks. Re-appearance for improvement is allowed for theory and practical subjects of all semesters, except for the final semester subjects. Revised mark statement will be issued after withdrawing the previous one, if the marks obtained in improvement are higher than the marks awarded earlier. When there is no improvement, there shall not be any change in the original marks already awarded. The improved marks shall be considered for classification but not for ranking.

Provision for Re-totalling and Revaluation of valued answer scripts

- UG candidates may apply for re-totalling / revaluation of valued answer scripts, to the Controller of Examinations through the Heads of Departments and Principal / Dean, in the prescribed forms, remitting the prescribed fee within 7 days from the date of publication of results. Revaluation of answer scripts is permissible only for the current semester papers and not for any arrear paper.

- Those wish to apply for revaluation of final semester papers can do so within five days from the date of publication of results. In re-valuation, the answer papers will be valued by an external examiner and if there is a difference of 15 marks between the two evaluations then the script will be sent for third valuation which is final and the mark awarded by the third examiner will be taken into the account.
- Revised mark statement will be issued after withdrawing the previous one, if the marks obtained in revaluation / retotalling are higher than the marks obtained earlier. In other cases, the original marks obtained earlier will be retained and the matter will be intimated to the student concerned as 'No change'.
- A candidate who applies for revaluation should not apply for retotalling.

RESTRICTIONS TO APPEAR FOR THE EXAMINATIONS

Candidates who fail in any of the papers in the UG End semester examinations shall complete the paper concerned within N+2 years from the date of admission to the particular course. If they fail to do so, they shall re-register their names and take the examination in the texts/revised regulations/syllabus of the paper prescribed for the subsequent batch of candidates, in force at the time of their reappearance. In the event of removal of that paper consequent to change of regulation and/or curriculum after N+2 years period, the candidate shall have to take up an equivalent paper in the revised syllabus as suggested by the Chairman, Board of Studies concerned.

12. BETTERMENT OF GRADES

A student who has secured only a Pass or Second class and desires to improve his/her Class can appear for Betterment Examinations only in Theory courses of any Semester of his/her choice, conducted in Summer Vacation along with the Special Examinations. Betterment of Grades is permitted 'only once' immediately after completion of the program of study.

13. DETENTION AND RE-ADMISSION

If a student fails to meet the minimum attendance requirement or minimum standards for academic progression, the concerned academic head will recommend for detention and it will be notified by the concerned Dean of the School. The students who are detained in the current semester will not be allowed to register for the next semester and they have to repeat the same semester.

The candidates who are detained or availed academic break or suspended in the previous semester/academic year and want to continue their study shall apply for re-admission to the university. The candidates shall request for re-admission to the respective Head of the Department, with details viz., Full Name, Registration Number, Department, School, Fee payment particulars with proofs and reasons for discontinuations. The concerned academic head will forward it to the Registrar with specific comments. The Registrar will notify the decision of re-admission which shall include the prescribed fee particulars, semester/ year into which readmission is granted and additional courses to be completed by the student (if any). The candidates should apply for re-admission in advance, that is before the commencement of the semester.

14. GROOMING AND ATTIRE FOR STUDENTS

Grooming and Etiquette is of great significance in the dynamic of shaping one's Personality. The Apollo University stands by a *Code of Grooming, Attire and Etiquette* that promotes a professional standard: Academic Day; Campus Placements and Non-Academic Hours on Campus.

The Dress Code to be in compliance on academic premises while attending: Formal Functions of the Institution / Lectures / Practicals / Dining Area / Library / Labs / Office Areas.

Students shall follow appropriate attire during Academic and Non-Academic hours on the campus. Students shall wear clean, neat, pressed and presentable clothing, and command respect by dressing in accordance with responsible personal norms. Students shall always wear The Apollo University ID Card with the Lanyard.

Grooming and Formal Wear - Boys:

Formal Shirts / T-Shirts with a Collar should preferably be tucked in with a Formal pair of Pants Shoes and Socks to complete the Formal Attire. Personal Hygiene should be followed and Hair should be well groomed.

Smart Casuals for Boys:

Long Kurtas / Formals / Semi-Formal Shirts with Jeans.

Grooming and Formal Wear - Girls: Sarees / Salwar Suits / Leggings or Jeggings with Long Kurtis / Long Frocks / Long Skirts / Palazzos. Complement the outfit with proper footwear. Personal Hygiene should be followed and Hair should be well groomed.

Smart Casuals for Girls:

Jeans with long Kurtis / Long Skirts / Long Frocks.

Attire for Non-Academic Hours On Campus:

The students should be neatly attired during Non-Academic Hours on Campus.

Dress Code for Boys:

Jeans / Track Suits / T-Shirts / Trousers / Shirts.

Dress Code for Girls:

Jeans / T-Shirts or Blouses / Salwar Suits / Palazzos / Leggings or Jeggings with Long Tops / Sarees / Long Skirts / Track Suits.

DO'S AND DO'NTS FOR BOYS AND GIRL STUDENTS OF THE UNIVERSITY:

- To wear modest clothing that reflects the essence of good personal grooming standards.
- To refrain from wearing Sleeveless Clothing; Shorts; Short Tops, etc.,

PLEASE NOTE: The decision as to what constitutes Appropriate Attire vests with the Authorities of The Apollo University.

15. ELIGIBILITY FOR AWARD OF THE DEGREE

The undergraduate degree will be of 4-years/ 3-years(Lateral Entry) of duration. A student shall be declared as eligible for the award of the degree if the candidate has successfully secured the minimum number of required credits as specified in the curriculum corresponding to the branch of his/her study within the stipulated time.

After successful completion of the program, a provisional certificate cum memorandum of grades (PCMG) will be issued to the students. The PCMG includes the secured grades and class achieved in chosen program and specialization if any, along with grades and CGPA secured by the student. The original degree will be presented in the subsequent convocation.

16. DISCRETION POWER

Not with-standing anything contained in the above sections, the Vice Chancellor may review all exceptional cases, and give his decision, which will be final and binding.

ANNEXURE 1

ELIGIBILITY FOR QUALIFYING EXAM FOR UNDER GRADUATE PROGRAMS

Program Type	Program Name	Eligibility
Bachelor's	Respiratory Therapy Technology	Passed with at least 45% (40% in case the candidates belong to reserved category) marks with Botany, Zoology, Physics and Chemistry or Inter vocational with Bridge course of Biological and Physical Sciences (or) APOSS with Biological Sciences and Physical Sciences from a recognized board or other equivalent board or Intermediate and attain 17 Years as on 31st December of Calendar Year.

ANNEXURE 2**PROGRAMS OFFERED BY THE DIVISION OF ALLIED HEALTH SCIENCES
FROM THE ACADEMIC YEAR 2021-22**

Sl. No.	Program	Expanded	Level	Minimum Duration in Years (N)
1.	B.Sc. PAT	B.Sc. Physician Assistant	Bachelor's	4
2.	B.Sc. MLT	B.Sc. Medical Lab Technology	Bachelor's	4
3.	B.Sc. IMT	B.Sc. Imaging Technology	Bachelor's	4
4.	B.Sc. AOTT	B.Sc. Anaesthesiology and Operation Technology	Bachelor's	4
5.	B.Sc. RDT	B.Sc. Renal Dialysis Technology	Bachelor's	4
6.	B.Sc. RTT	B.Sc. Respiratory Therapy Technology	Bachelor's	4
7.	B.Sc. EMT	B.Sc. Emergency Medical Technology	Bachelor's	4
8.	BOPT	Bachelors in optometry	Bachelor's	4

I - Semester

Induction Programme						
Course Code	Course Name	Periods per week			Credits	Hours per week
		L	T	P		
AHSJ1301	Anatomy	3	1	2	5	6
AHSJ1302	Physiology	3	1	2	5	6
AHSJ1303	Biochemistry	3	1	2	5	6
TAUT1101	University core (Communicative English)	3	0	0	3	3
TAUT1201	University Elective - I	3	0	0	3	3
--	Mentoring	0	0	0	0	1
--	Library	0	0	0	0	1
--	Physical Activity	0	0	0	0	2
--	Extracurricular activities	0	0	0	0	2
--	Co-curricular activities	0	0	0	0	2
--	Self-Learning	0	0	0	0	2
--	Seminar	0	0	0	0	2
TOTAL		15	3	6	21	36

II – Semester

Course Code	Course Name	Periods per week			Credits	Hours per week
		L	T	P		
AHSJ1306	Pharmacology	3	1	2	5	6
AHSJ1304	Microbiology	3	1	2	5	6
AHSJ1305	Pathology	3	1	2	5	6
TAUT1102	University Core - II (Environmental Studies)	3	0	0	3	3
TAUT1202	University Elective - II	3	0	0	3	3
RTTT1501	Fundamentals of Respiratory Therapy	3	0	0	3	3
--	Mentoring	0	0	0	0	1
--	Library	0	0	0	0	1
--	Physical Activity	0	0	0	0	2
--	Extra-curricular activities	0	0	0	0	2
--	Self – Learning	0	0	0	0	2
--	Seminar	0	0	0	0	1
TOTAL		18	3	6	24	36

III – Semester

Course Code	Course Name	Periods per week			Credits	Hours per week
		L	T	P		
RTTT2501	Respiratory therapy-oriented Anatomy & physiology	3	1	0	4	4
RTTT2502	Pharmacology Specific to Respiratory Therapy	3	1	0	4	4
RTTT2503	Pathophysiology Specific to Respiratory Diseases - I	3	1	0	4	4
RTTL2501	Clinical Skills - I	0	0	12	6	12
TAUT2101	University Core – III (Health and Wellness)	3	0	0	3	3
TAUT2201	University Elective - III	3	0	0	3	3
--	Mentoring	0	0	0	0	1
--	Extra-curricular activities	0	0	0	0	2
--	Library	0	0	0	0	1
--	Seminar	0	0	0	0	1
--	Self-Learning	0	0	0	0	1
TOTAL		15	3	12	24	36

IV – Semester

Course Code	Course Name	Periods per week			Credits	Hours per week
		L	T	P		
RTTT2504	Pathophysiology specific to Respiratory Therapy- II	3	1	0	4	4
RTTT2505	Diagnostic Techniques in Pulmonary Diseases - I	3	1	0	4	4
RTTT2506	Diagnostic Techniques in Pulmonary Diseases - II	3	1	0	4	4
RTTL2502	Clinical Skills - II	0	0	20	10	20
--	Mentoring	0	0	0	0	1
--	Extra-curricular activities	0	0	0	0	2
--	Library	0	0	0	0	1
TOTAL		9	3	20	22	36

V – Semester

Course Code	Course Name	Periods per week			Credits	Hours per week
		L	T	P		
RTTT3501	Respiratory Therapy Techniques - I	3	1	0	4	4
RTTT3502	Respiratory Therapy Techniques - II	3	1	0	4	4
RTTT3503	Instrumentation & troubleshooting specific to Respiratory Therapy	3	1	0	4	4
RTTL3501	Clinical Skills - III	0	0	16	8	16
RTTT3601	Program Elective - I	3	0	0	3	3
--	Mentoring	0	0	0	0	1
--	Extra-curricular activities	0	0	0	0	2
--	Seminar	0	0	0	0	1
--	Library	0	0	0	0	1
TOTAL		12	3	16	23	36

Program Elective - I	
Course Code	Course Name
RTTT3601a	Advanced Respiratory Therapy in Adult ICU Care – I
RTTT3601b	Neonatal and Paediatric Respiratory Care – I
RTTT3601c	Mechanical Ventilation - I

VI – Semester

Course Code	Course Name	Periods per week			Credits	Hours per week
		L	T	P		
RTTT3504	Polysomnography	3	1	0	4	4
RTTT3505	Pulmonary Rehabilitation	3	1	0	4	4
RTTT3506	Life Support System	3	1	0	4	4
RTTL3502	Clinical Skills - IV	0	0	16	8	16
RTTT3602	Program Elective - II	3	0	0	3	3
--	Mentoring	0	0	0	0	1
--	Extra-curricular activities	0	0	0	0	2
--	Seminar	0	0	0	0	1
--	Library	0	0	0	0	1
TOTAL		12	3	16	23	36

Program Elective -II	
Course Code	Course Name
RTTT3602a	Advanced Respiratory Therapy in Adult ICU Care – II
RTTT3602b	Neonatal and Paediatric Respiratory Care – II
RTTT3602c	Mechanical Ventilation - II

VII & VIII Semester

Course Code	Course Name	Periods per week			Credits	Hours per Semester
		L	T	P		
RTTI4501*	Internship-I			48	25	1104
TOTAL				48	25	1104

Course Code	Course Name	Periods per week			Credits	Hours per Semester
		L	T	P		
RTTI4502*	Internship-II			48	25	1104
RTTP4501	Project			8	6	180
TOTAL				56	31	1284

***Internship Evaluation can be submitted at the end of the Year**

I - Semester

AHSJ1301

ANATOMY

L T P C

3 1 2 5

Course Description:

This course will cover anatomy with special emphasis on general anatomy including anatomical position, anatomical planes, cell structure, tissues and upper and lower limbs focusing on important muscles, arteries, veins, and nerves which are of significant clinical importance. This course also covers important and relevant anatomical knowledge of all systems namely nervous, cardiovascular, respiratory, gastrointestinal, reproductive, and excretory systems. This course also covers practical teaching of osteology, gross anatomy of important viscera, radiology and histology.

Course Objectives:

Students undergoing this course are expected to:

1. Understand and describe the **gross anatomy** of the human body with emphasis on normal structure, functional relevance, and applied aspects.
2. Learn and recall the **origin, insertion, action, and nerve supply of clinically significant muscles** of the body.
3. Understand the **origin, course, branches, distribution, and clinical significance** of major blood vessels and peripheral nerves.
4. Explain the **location, external features, relations, blood supply, lymphatic drainage, and innervation** of vital organs of various systems (nervous, cardiovascular, respiratory, gastrointestinal, reproductive, endocrine, and excretory).
5. Describe the **surface landmarks and applied anatomy** relevant for clinical practice and diagnostic procedures

THEORY

Total: 60 Hrs

UNIT-I

12 Hrs

INTRODUCTION

- Introduction to anatomy
- Define Anatomy and list its sub-divisions.
- Describe the Anatomical position.

General Histology

- Describe the human cell and its organelle.

- Describe the types of cell division and give examples.
- List out the types of tissues and describe their basic structure.
- Briefly describe the types of connective tissue including specialized connective tissue
- Describe the types and functions of epithelia.

UPPER LIMB

- Name the important bones, muscles, blood vessels & nerves of the upper limb.
- Briefly describe the movements of joints and the nerve supply and actions of the important muscle groups of the upper limb
- Describe the location and course of the major blood vessels & nerves of the upper limb.

UNIT-II

12 Hrs

LOWER LIMB

- Name the important bones, muscles, blood vessels & nerves of the lower limb
- Briefly describe the movements of joints, nerve supply and actions of the important muscle groups of the lower limb
- Describe the location and course of the major blood vessels & nerves of the lower limb

RESPIRATORY SYSTEM

- Name the parts of the respiratory system.
- Briefly describe the pleura and its disposition
- Describe the external features of the lungs and their relations.
- Name the bronchopulmonary segments in each lung and explain their significance.
- Briefly describe the mechanism of respiration

UNIT-III

12 Hrs

CARDIOVASCULAR SYSTEM

- Describe the important external and internal features of the heart.
- Briefly describe the blood supply of the heart
- Describe the circulation of blood through the heart and types of circulation.
- Describe the aorta and its branches.
- List out the major veins that join into the superior and inferior vena cavae.
- Briefly describe the lymphatic system and its function

NERVOUS SYSTEM

- Classify nervous system.

- Describe briefly the external and internal features of the spinal cord, its coverings and blood supply.
- Describe briefly the external and internal features of the brainstem and the functional significance of the tracts and nuclei seen in the brainstem.
- Briefly describe the cerebellum and its peduncles
- Describe the cerebrum in brief and its lobes and functional areas of importance.
- Briefly describe the circulation of cerebrospinal fluid

UNIT-IV

12 Hrs

ENDOCRINE SYSTEM

- Name the endocrine glands and the hormones secreted by each.
- Briefly describe the anatomy and physiology of the pituitary, thyroid, parathyroid, Adrenal, and pancreas.

REPRODUCTIVE SYSTEM

- Describe briefly the male reproductive system.
- Describe briefly the female reproductive system.
- List out the hormones released by the organs in the reproductive system.

EXCRETORY SYSTEM

- Describe briefly the excretory system.

UNIT-V

12 Hrs

GASTROINTESTINAL SYSTEM

- Briefly describe the extent, important anatomical features, and relations of various parts of the gastrointestinal tract.
- Describe the important anatomical features, surface anatomy, relations and functions, and blood supply of the liver.
- Briefly describe the parts, important features and functions of the oesophagus, stomach, duodenum, small intestine, and large intestine.
- Describe briefly the important anatomical features, position and relations and functions of pancreas and spleen.
- Briefly describe the blood supply of the gastrointestinal system.

Course outcomes:

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

1. Explain the origin, insertion, action, nerve supply, and clinical importance of major muscles of the human body.
2. Describe the origin, course, branches, distribution, and clinical relevance of important vessels and nerves.
3. Explain the location, external features, relations, blood supply, and clinical significance of organs belonging to the nervous, cardiovascular, respiratory, gastrointestinal, reproductive, endocrine, and excretory systems.
4. Identify and interpret the osteological and radiological features of bones, joints, and soft tissues with applied clinical correlations.
5. Describe the histological structure of tissues and organs and correlate them with function and pathology.

PRACTICALS

Total: 30 Hrs

Course Objective: The course will cover Anatomy with special emphasis on osteology, histology, demonstration of viscera, radiology.

The assessment of the students will be undertaken with the help of following exercises.

- Spotters
- Viva

Textbooks:

1. Manipal manual of Human anatomy
2. Human anatomy & Physiology for Nursing – Mahindra Kumar Anand & Meena Verma
3. Understanding Human Anatomy & physiology – Willian Davis (McGraw Hill)
4. Anatomy & physiology – Kaarna Muni Shekhar
5. Textbook of Anatomy – Chaurasia
6. Textbook of Anatomy – TS Ranganathan Human Anatomy – Fattana.

Reference Books:

Textbook of anatomy-Vishram Singh

AHSJ1302

PHYSIOLOGY

L T P C

3 1 2 5

Course Description:

The goal of this course is to help students in understanding functions, regulation, and integration of organ systems of the human body.

Course Objectives:

- Describe the concept of homeostasis.
- Interpret the structure of the cell membrane and describe the transport mechanisms for solute and water across the cell membrane. Explain the basis of membrane potential.
- Describe the structure and functional organization of the human nervous system and its subdivisions. Discuss the role of nervous system in homeostasis.
- Understand how heart and blood vessels work to maintain a constant delivery of blood flow (oxygenated) to all the tissues and simultaneously how the blood is returned (deoxygenated/ venous blood) to the heart. Explain how cardiovascular system adjust its activity to meet the demands placed by the body during activities of daily life (E.g., exercise)
- Describe the basic anatomy and functions of the pulmonary system.
- Explain the role of kidney in blood pressure, electrolyte, and fluid homeostasis.
- Elaborate on how the structure of gastrointestinal tract suited for digestion and absorption. Discuss the mechanism of digestion and absorption at various levels of gastrointestinal tract.
- Describe how endocrine organs are involved in regulation of growth, metabolism, fluid and electrolyte balance and reproduction.

THEORY

Total: 60 Hrs

UNIT-I

10 Hrs

1. General Physiology (Cell Physiology)

- Homeostasis
- Cell structure and functions of cell with special emphasis on characteristics of cell membranes, Transport mechanisms across cell membrane.
- Body Fluid Compartments (volume, composition, and units to measure solute concentration).

2. Nerve-Muscle Physiology

- Neuron (structure and function), Classification of neurons, Neuroglia, Type of nerve fibers, Resting membrane potential and Action potential.
- Neuromuscular Junction (skeletal muscle) and Neuromuscular blocking drugs
- Classification and functions and structure of muscles, Excitation contraction coupling, Mechanism of muscle contraction
- Differences between skeletal, smooth, and cardiac muscle.
- Applied physiology: Nerve injury, Myasthenia gravis, Neuromuscular junction blockers, Muscular dystrophy.

3. Blood (Hematology)

- Composition of blood, functions of cellular (RBC, WBC, and platelets) and non-cellular (plasma and plasma proteins) components of blood.
- RBC (Erythrocyte): Erythropoiesis and factors affecting it, Normal count, and variations. Hemoglobin: Functions and recycling of hemoglobin, Jaundice, Anemia.
- WBC: Classification, morphology, site of production, functions, normal and differential count, and variations. Immunity.
- Platelets: Origin, normal count, and functions (role in hemostasis).
- Hemostasis: Clotting factors and their role in hemostasis. Disorders of Hemostasis.
- Blood groups: ABO & Rh systems, Erythroblastosis fetalis, Hazards of mismatched blood transfusion
- Reticuloendothelial system

UNIT-II

13 Hrs

1. Nervous system (Central Nervous system)

- Parts (gross connections)
- **Cerebral hemisphere:** parts, corpus callosum, cerebral cortex, and functions of frontal, parietal, temporal, and occipital lobes of the cerebrum.
- Connections between motor cortex and subcortical structures and spinal cord (descending tracts). Connections between spinal cord and thalamus- somatosensory cortex of parietal lobe (ascending tracts).
- Upper and lower motor neurons
- Descending and ascending tracts (origin, location, course, and termination)

- **Subcortical structures**
Basal ganglia, Thalamus, Hypothalamus, and Limbic system. Nuclei of subcortical structures, its connections with various parts of the brain and its functions.
- **Brain stem:** (Midbrain, Pons, and Medulla oblongata)
Nuclei, connections, and its functions
- **Cerebellum**
Physiological anatomy: lobes, cerebella cortex, connections (afferent and efferent), functions and applied aspects.
- Reticular formation and its functions
- Sleep
- **Spinal cord:** parts of gray matter and constituents of white matter. Applied physiology.

Peripheral Nervous System

- Divisions and constituents of the peripheral nervous system
- Functions of cranial and spinal nerves
- Physiological anatomy of somatic nervous system and its functions
- Physiological anatomy of autonomic nervous system (sympathetic and parasympathetic) and its functions

2. Special senses

- **Vision** –Functional anatomy of eye, visual pathway. Applied physiology: lesions along visual pathway and its effect. Refractive errors.
- **Hearing**– Physiological anatomy of ear, Mechanism of hearing, and auditory pathway. Applied physiology: deafness.
- **Olfaction** –receptors and pathway, function, and its applied physiology
- **Gustation**-modalities, receptor, function, taste pathway, and its applied physiology

UNIT- III

14 Hrs

1. Cardiovascular system

- Physiological anatomy of the heart, autonomic innervation, and its action on the heart, pulmonary and systemic circulation
- Properties of cardiac muscle
- Conducting system of the heart
- Electrocardiogram
- Cardiac cycle, Heart sounds.
- Vascular system (branching), hemodynamics, factors influencing resistance to the blood flow.

- Cardiac output: definition, factors regulating it and measurement of cardiac output.
- Blood pressure: Definition, components, determinants of blood pressure and factors regulating it.
- Lymphatic system and its functions
- Pulse
- Applied aspects of cardiovascular physiology: myocardial infarction, heart failure, shock, and others
- Cardiovascular changes during exercise

2. Respiratory System

- Physiological anatomy of the respiratory tract, conducting and respiratory zone of the respiratory tract, pleural and pleural cavity, mechanics of respiration, changes in intrapleural and intrapulmonary pressures during respiratory cycle.
- Compliance and factors affecting it (surface tension and surfactant), respiratory distress syndrome.
- Lung volumes and capacities
- Respiratory membrane, partial pressure of gases, transport of O₂ and CO₂, Oxyhemoglobin dissociation curve.
- Regulation of respiration (Chemical and Neural)
- Hypoxia, dyspnea, apnea, asphyxia, and cyanosis
- Artificial respiration

UNIT-IV

13 Hrs

1. Digestive System

- Introduction to Gastrointestinal system and Physiological anatomy of the wall of Gastrointestinal tract
- **Salivary glands** and its function, mastication, pharynx, and Deglutition
- **Stomach:** physiological anatomy, composition of Gastric juice (HCL secretion), its functions and its regulation.
- Vomiting reflex.
- **Liver and gall bladder:** Bile composition and its functions, and other functions of the liver, functions of the gall bladder. Enterohepatic circulation
- **Pancreas:** Pancreatic juice composition, its functions and regulation of its release.
- **Small intestine:** Succus entericus composition, functions, and regulation of its release. Small intestinal motility and its functions.
- **Large intestine:** function, movements, and Defecation reflex
- Digestion and absorption of carbohydrates, fats, and proteins.

2. Renal System

- Physiological anatomy & functions of the kidney, blood supply and special features of blood flow to the kidney. Structure and types of nephrons
- Histology of the renal corpuscle: Juxtaglomerular apparatus.
- Mechanisms of formation of urine: Glomerular filtration rate (GFR), Tubular reabsorption (Special emphasis on reabsorption of water, Na⁺, Glucose, HCO₃⁻ and Ca²⁺) and tubular secretion (special emphasis on secretion of K⁺ and H⁺). Renal handling of urea, Renal threshold, and Tubular maximum.
- GFR: Starling forces acting across the glomerular capillaries and factors affecting GFR
- Concentration of urine: role of counter-current multiplier and counter-current exchanger
- Role of kidney in Regulation of blood pressure and pH
- Diuresis, diuretics, renal clearance. Renal function tests.
- Artificial kidney (Dialysis)
- Skin: Physiological anatomy of the skin and its role in temperature regulation.

UNIT-V

10 Hrs

1. Endocrine System

- Physiological anatomy & functions of the kidney, blood supply and special features of blood flow to the kidney. Structure and types of nephrons
- Histology of the renal corpuscle: Juxtaglomerular apparatus.
- Mechanisms of formation of urine: Glomerular filtration rate (GFR), Tubular reabsorption (Special emphasis on reabsorption of water, Na⁺, Glucose, HCO₃⁻ and Ca²⁺) and tubular secretion (special emphasis on secretion of K⁺ and H⁺). Renal handling of urea, Renal threshold, and Tubular maximum.
- GFR: Starling forces acting across the glomerular capillaries and factors affecting GFR
- Concentration of urine: role of counter-current multiplier and counter-current exchanger
- Role of kidney in Regulation of blood pressure and pH
- Diuresis, diuretics, renal clearance. Renal function tests.
- Artificial kidney (Dialysis)
- Skin: Physiological anatomy of the skin and its role in temperature regulation.

2. Reproductive system

- Introduction to reproductive system, sex differentiation, and Puberty.
- **Male reproductive system**, physiological anatomy of the testis and its functions, functions of testosterone, Spermatogenesis, and its regulation.
- **Female reproductive system**; physiological anatomy of ovaries and uterus.
- Functions of ovaries; Oogenesis and ovarian cycle, functions of Estrogen and Progesterone, and menstrual cycle.
- Physiological changes during pregnancy, pregnancy tests, parturition & lactation.

- Male & Female contraceptive methods

Course Outcome:

At the end of the course, students should

1. Describe the normal functions of cells, tissues, organs, and organ systems in the human body.
2. Explain the mechanisms of regulation and integration of different organ systems in maintaining homeostasis.
3. Discuss the physiological adaptations to altered states such as exercise, fasting, stress, and environmental changes (e.g., high altitude).
4. Demonstrate the ability to perform and interpret physiological experiments and correlate findings with theoretical concepts.
5. Apply physiological knowledge to clinical cases, diagnostic methods, and health sciences practice.

PRACTICALS

Total: 30 Hrs

HEMATOLOGY

- Microscope
- Estimation of Hemoglobin
- Estimation of bleeding time and clotting time
- Measurement of ESR – demo
- Estimation of PCV – demo
- Perform RBC count of given blood sample.
- Perform WBC count of given blood sample.
- Perform a Differential Leucocyte Count.
- Calculation of blood indices

CLINICALS

A. Cardiovascular system

- Examination of radial pulse
- Measurement of blood pressure
- Recording of ECG- demo
- Measure of weight and height and calculate body mass index
- Demonstrate JVP, apex beat, percussion of cardiac borders, auscultation of heart sounds.

B. Respiratory system

- Measurement of respiratory rate and temperature
- Examination of respiratory system and temperature
- Spirometry demo

C. Nervous system

- Examination of cranial nerves
- Motor system examination
- Examination of reflexes
- Examination of the sensory system

D. Special senses

- Eye: Tests for vision (Acuity and colour perception)
- Ear: Hearing tests

Textbooks:

1. HH Sudhakar D Venkatesh “Basics of Medical Physiology”, 5th edition, Wolters Kluwer, 2023.
2. K Sembulingam, Prema Sembulingam, “Essentials of Physiology for Paramedical Students” JAYPEE, 2021.

Reference Books:

1. John E Hall and Michael E. Hall, Guyton & Hall, “Textbook of Medical Physiology” 14th edition, 2020
2. Eric P. Widmaier, Hershel Raff, and Kevin T. Strang “Vanders Human Physiology” 15TH edition, 2018.

AHSJ1303

BIOCHEMISTRY

L T P C

3 1 2 5

Course Description:

This course introduces students to the structure and function of essential biomolecules, which are the organic compounds that constitute the various components of living cells. The course

covers the biochemical reactions that facilitate cellular growth, maintenance, reproduction, and energy utilization and storage.

Course Objectives:

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

- Understand the structure and functions of the cell membrane and organelles.
- Comprehend the chemistry of carbohydrates, lipids, proteins, and nucleic acids.
- Explain enzyme actions, mechanisms, inhibition, and clinical enzymology.
- Grasp the significance of nutrition, including vitamins and minerals.
- Describe the structure and functions of immunoglobulins and hemoglobin.

THEORY

Total: 60 Hrs

UNIT-I

4 Hrs

Cell and Membrane: Cell organelles and their functions, membrane structure, transport mechanisms across membranes, ionophores, membrane proteins, and transporters.

UNIT- II:

15 Hrs

Chemistry of Biomolecules

- **Chemistry of Carbohydrates:** Definition, classification, important monosaccharides, stereoisomers, anomers, mutarotation, and reactions of monosaccharides (tautomerization, reduction, dehydration, osazone formation). Important disaccharides and polysaccharides.
- **Chemistry of Lipids:** Definition, classification, nature of fatty acids, triacylglycerol, saponification, iodine number, rancidity, antioxidants, complex lipids, steroids, and cholesterol functions.
- **Chemistry of Amino Acids, Peptides, and Proteins:** Definition, classification, peptide bonds, biologically important peptides, essential and non-essential amino acids, protein structure (primary, secondary, tertiary, quaternary), precipitation, denaturation, coagulation, and color reactions of amino acids.
- **Chemistry of Nucleic Acids:** Nitrogenous bases, nucleosides, nucleotides, DNA, genes, and types of RNA involved in protein synthesis.

UNIT-III:

5 Hrs

Enzymes: Definition, classification, factors affecting enzyme activity, mechanism of action, coenzymes, proenzymes, isoenzymes, measurement units, competitive and non-competitive inhibitors, and clinical enzymology with normal values.

UNIT- IV:

12 Hrs

Nutrition and Vitamins

- **Nutrition:** Calorific values of food, basal metabolic rate, specific dynamic action, energy requirements, nutritional importance of carbohydrates, lipids, proteins, nitrogen balance, protein supplementation, Kwashiorkor, Marasmus, and Recommended Dietary Allowance (RDA).
- **Vitamins:** Overview of chemistry, sources, requirements, biochemical functions, deficiency symptoms of vitamins A, D, E, K, B-complex (thiamine, riboflavin, niacin, pantothenic acid, pyridoxine, biotin, folic acid, B-12), and Vitamin C.
- **Mineral Metabolism:** Classification of macro and micro elements, including sodium, potassium, calcium, phosphorus, iron, iodine, magnesium, copper, zinc, fluoride, manganese, selenium, and molybdenum.

UNIT -V:

4 Hrs

Immunology and Hemoglobin

- **Immunology:** Definitions of antigens and antibodies, structure and functions of antibodies.
- **Hemoglobin:** Structure and functions of hemoglobin, its derivatives, degradation process, and jaundice.

Course Outcomes: Upon successful completion of this course, students will be able to:

- Describe the structures and functions of cell membranes and organelles.
- Understand and explain the chemistry and classifications of major biomolecules.
- Classify enzymes and explain their mechanisms, inhibition types, and clinical relevance.
- Comprehend the basics of nutrition, including sources, recommended dietary allowances (RDA), functions, and deficiency symptoms of vitamins and minerals.
- Explain the structure and functions of immunoglobulins and hemoglobin.

Textbooks: latest editions

1. Concise Textbook of Biochemistry for Paramedical Students (2nd Edition, 2023) by DM Vasudevan
2. A Textbook on Biochemistry for Paramedical Students (2022) by Dr. Kiran Dahiya

Reference Book:

1. Textbook of Biochemistry for Medical Students (10th Edition, 2023) by DM Vasudeva

University Core – I
Semester – I

TAUT1101

COMMUNICATIVE ENGLISH

L T P C

3 0 0 3

Course Description:

The creation of the Course is to facilitate Stakeholders in productively using the Language to functional advantage to form meaningful engagements in a social context and influence their professional dynamic.

Course Objectives:

The objective of this course is to make students to:

1. To expand and enhance vocabulary systematically for clear communication, richer expression, and deeper comprehension across various contexts."
2. To provide the grammatical knowledge and skills necessary to communicate effectively in English, both orally and in writing.
3. To strengthen their ability to write academic papers, essays and summaries using the "Mind Mapping,' dynamic.
4. To enhance communication skills by analyse, evaluate, and express their opinions on various topics, fostering the development of critical thinking abilities
5. To develop proficiency in listening, speaking, reading and writing, enabling individuals to communicate effectively in various real-life situations.

UNIT-I

9 Hrs

Vocabulary and Reading: Special Features of English Vocabulary, Reading With Purpose; Understanding What is Read; Drawing a Conclusion Based on Inferences, Deduction, Reading Between the Lines, Context, Connotation, Higher Order Thinking; How to Explain Specific Information with Clarity; Defining and Giving Reasons; Giving Directions; Professional Vocabulary.

UNIT-II

9 Hrs

Basic Grammar: Subject-Verb Agreement; Verb Tenses; Active-Passive Voice; Direct and Indirect Speech; Question Tags; Degrees of Comparison; Articles; Avoiding Jargon.

UNIT-III

9 Hrs

Writing: Letter Writing; Report Writing; E-Communication, Drafting and Collating Key Information, Taking Notes from Lectures, Reading Materials, Reporting on Minutes of the Meeting, Precis Writing

UNIT-IV**9 Hrs**

Basics of Communication: Role of Communication; Purpose of Communication; Barriers to Communication; Verbal and Non-Verbal Communication, Communication at the Workplace; Human Needs and Communication; “Mind Mapping” Communication; E-Communication.

UNIT-V**9 Hrs**

Presentations: Self-Introduction; Individual Presentation; Group Discussions; Debates.

Course Outcomes:

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

1. To review grammatical structures of English and the use of these forms in specific communicative contexts, which include: class activities, homework assignments, reading of texts and writing and functional real-world facets.
2. To improve their accuracy and fluency in producing and understanding spoken and written English and endorse this proficiency in both personal and professional realms.
3. To attain and enhance competence in the four modes of literacy: Writing, Speaking, Reading and Listening.
4. To develop their ability as critical thinkers.
5. To empower the individuals to connect, engage, and thrive in diverse personal and professional environments.

Text Books:

1. Meenakshi Raman and Sangeeta Sharma, “Technical Communication: Principles and Practice”, 3rd Edition, Oxford University Press, 2015.
2. M. Ashraf Rizvi, “Effective Technical Communication”, Second Edition, McGraw. Hill Education, 2017.
3. Wilfred Funk and Norman Lewis, “30 Days to a More Powerful Vocabulary”, Latest Edition, Pocket Books, 2021.

Reference Books:

1. Grant Taylor, “English Conversation Practice”, Tata McGraw-Hill Education India, 2016.
2. Gary Blake and Robert W. Bly, “The Elements of Technical Writing”, 2nd Edition, 2000, Longman.
3. Raymond Murphy, “English Grammar in Use”, Fourth Edition, Cambridge University Press, 2019.

University Elective - I

Semester - I

S. No	Name of the Course	Host Department
1	Basics of Physiotherapy	School of Health Sciences – Physiotherapy
2	Biostatistics	School of Health Sciences – BMS & GMB
3	Constitution of India	School of Social Sciences
4	Ethical Hacking	School of Technology - CSE
5	Fundamentals of Computers	School of Technology - CSE
6	Gender and Development	School of Social Sciences
7	Leadership Development	School of Management
8	Mathematical Thinking	School of Technology
9	Nursing	Apollo Institute of Nursing
10	One Health	School of Health Sciences – PH
11	Basic emergency care and life support skills	School of Health Sciences – AHS
12	Basics of Health Management	School of Health Sciences – AHS
13	Entrepreneurship	School of Management
14	Managerial Economics	School of Management
15	Organic Farming	School of Health Sciences – BMS & GMB
16	Personality Development	School of Health Sciences – Psychology
17	Social Entrepreneurship	School of Management

TAUT1201A

BASICS OF PHYSIOTHERAPY

L T P C
3 0 0 3

Course Description:

The course is designed to aim at imparting a basic level health program. This program is formulated to enable student to gain adequate knowledge, skills and leading to an ability to identify the basics of early features of the health issues

Course Objectives:

The objective of this course is to make students to:

1. Gather and interpret information within a holistic framework pertaining to health.
2. The overall content of the curriculum focuses on health care and clinical education experiences for each student
3. Understand the basic fundamentals of physiotherapy
4. Familiarizes participants with different procedures and techniques used in physiotherapy and their practical application across various conditions
5. Provide participants with a substantial understanding of physiotherapy and promote safe practices and ethical behaviour in physiotherapy practice.

UNIT-I Basics of Physiotherapy

5 Hrs

- i. What is Physiotherapy?
- ii. Types of Physiotherapy
- iii. Benefits of Physiotherapy
- iv. Why is Physiotherapy done?

UNIT-II Women's Health

5 Hrs

- i. Pre natal exercises & Care
- ii. Post Natal exercises

UNIT-III Acute injuries & management and the uses of Orthotics & Prosthetics 10 Hrs

- i. Mechanism of injury
- ii. Acute muscle injuries
 - Muscle strain
 - Risks of muscle strain
 - Muscle imbalance:
 - Muscle inflexibility:
- iii. Ligament sprain and difference between sprain and strain
- iv. Orthotics & Prosthetics

UNIT-IV Ergonomics & Health and Aerobics

13 Hrs

- i. work-related musculoskeletal disorders (MSDs).
- ii. Risk factors associated with work-related MSDs & Possible Causes
- iii. Common ergonomic symptoms
- iv. Different types of Ergonomics & principles of ergonomics and v. Ergonomic Control Methods
- v. Awkward body postures – hazards
- vi. Physical Activity and exercise
- vii. Physical Fitness and Maximum Oxygen Consumption
- viii. Aerobic Exercise Training and Physiological Response to Aerobic Exercise
- ix. Cardiovascular Response to Exercise and Respiratory Response to Exercise
- x. Responses Providing Additional Oxygen to Muscle and Exercise Program
- xi. Warm-Up Period, Aerobic Exercise Period and Cool-Down Period Application

UNIT-V Education & Awareness about common diseases and BLS

12 Hrs

- i. Bell's palsy
- ii. Diabetes
- iii. Coronary artery heart disease
- iv. OA Knee
- v. Stroke
- vi. LBA
- vii. Early identification of congenital anomalies
- viii. BLS Theory
- ix. BLS Practical's

Course Outcomes:

1. Gain the basic knowledge of Physiotherapy
2. Familiarize the procedures and techniques used in physiotherapy
3. Protect and manage from the sport injuries
4. Gain Knowledge about Ergonomics
5. To maintain physical fitness

Text Books:

1. Physiotherapy In Obstetrics and Gynecology-Polden and Mantle, Jaypee Brothers
2. Women's Health- Ruth Sapsford, Lippincott, 1998
3. Textbook of orthopedics medicine Vol I & II by James Cyriax – Bailliere
4. Susan B O'Sullivan, Physical Rehabilitation 6th Edition, 6 edition F A Davis; 2013.

ISBN-13: 978-0803625792

5. Arias' Practical Guide To High Risk Pregnancy and Delivery by Amarnath Bhide, Sabaratnam Arulkumaran

Reference Books:

1. John Ebenezer- Essentials of Orthopedics for Physiotherapists- 3rd edition 2016
2. Davidson's principles and practice of medicine
3. Fundamentals of Ergonomics in Theory and Practice- Alan Hedge- 2019
4. Introduction to Ergonomics, Third Edition" -Robert Bridger- 2018
5. Human Factors and Ergonomics in Practice: Improving System Performance and Human Well-Being"- Steven Shorrock, Claire Williams- 2020
6. Acute Care Handbook for Physical Therapists- Jaime C. Paz, Michele P. West- 2019
7. Sports Injury Prevention and Rehabilitation: Integrating Medicine and Science for Performance Solutions" David Joyce, Daniel Lewindon- 2015
8. Orthotic Intervention for the Hand and Upper Extremity: Splinting Principles and Process"- Marylyn A. Jacobs, Noelle M. Austin- 2013
9. Prosthetics and Orthotics: Lower Limb and Spine"- Joan E. Edelstein, Alex Moroz- 2017
10. "Essentials of Physiotherapy"- Prakash Narain Tandon- 2016
11. Pathology for the Physical Therapist Assistant - Catherine C. Goodman, Kenda S. Fuller- 2020 (3rd Edition)

TAUT1201B

BIOSTATICS

L T P C

3 0 0 3

Course Description:

Biostatistics is the application of statistical methods to biological and health-related fields. This course provides a comprehensive introduction to the principles and techniques of biostatistics essential for conducting research in medicine, public health, and biology. Students will learn how to effectively collect, analyze, and interpret data from biological and health sciences, with a focus on understanding and addressing key issues such as experimental design, sampling methods, data visualization, hypothesis testing, and regression analysis.

Course Objectives:

1. Gain a solid understanding of biostatistical principles including descriptive statistics, probability, hypothesis testing, and regression analysis.
2. Apply these principles to analyze data from biological and health sciences, focusing on experimental and observational studies.
3. Critically interpret statistical results and effectively communicate findings to different audiences.
4. Develop proficiency in using statistical software for data manipulation, analysis, and visualization.
5. Design studies, evaluate literature, and collaborate in interdisciplinary teams, preparing for advanced study and research in biostatistics and related fields.

UNIT-I Descriptive methods**9 Hrs**

Frequency Distribution, Characteristics of a Frequency Distribution, Tabular and Graphical Presentation of Data: Line Graphs, Bar Charts, Histograms, Ogives.

UNIT-II Measures of central tendency**9 Hrs**

Arithmetic Mean, Median, Mode, Position of Averages, Selection of the Appropriate Measure of Central Tendency, Geometric Mean, Harmonic Mean.

UNIT-III Measures of dispersion**9 Hrs**

Range, Interquartile Range, Mean Deviation, Variance and Standard Deviation

UNIT-IV Sampling Designs**9 Hrs**

Sampling and Sample Designs, Significance of Probability and Non-probability sampling methods, Crossover Design, Case Control Design, Cohort Study Design, Designing clinical trials -Single- and Double-Blind Experiments.

UNIT-V Data analysis and interpretation**9 Hrs**

Tests of hypothesis, Tests of significance, chi-square test, Goodness of fit, Analysis of variance.

Course Outcomes:

1. Ability to design experiments, sampling variables, analyze the biological data, interpret and present the results in meaningful way.
2. Create tables and graphs for data presentation
3. Describe measures of central tendency and dispersion along with calculating probability features of experiments.
4. Discuss the correlation between various types of data along with associated variables.
5. Test hypothesis and carry out related statistical tests

Text Books:

1. Daniel WW, Cross CL (2013) Biostatistics: A Foundation Sciences
2. Biostatistics: A Foundation for Analysis in the Health Sciences, 11th Edition Chad L. Cross, Wayne W. Daniel, ISBN: 978-1-119-49657-1, December 2018

Reference Books

1. Forthofer RN, Lee ES, Hernandez M (2006) To Design, Analysis, and Discovery. Elsevier Ltd., Amsterdam.
2. Principles of Biostatistics, 3rd Edition, By Marcello Pagano, Kimberlee Gauvreau, Heather Mattie (2022)

TAUT1201C

CONSTITUTION OF INDIA

**L T P C
3 0 0 3**

Course Description:

The Constitution of India course provides a comprehensive understanding of the fundamental principles, structure, and functioning of the Indian Constitution. This course examines the historical evolution, key features, and various interpretations of the Constitution, highlighting its significance in shaping India's legal and political landscape. Through this course, students will gain insights into the roles and responsibilities of different branches of government, fundamental rights and duties of citizens, and the constitutional mechanisms that ensure the democratic functioning of the nation.

Course Objectives:

- 1 To realize the significance of constitution of India to students from all walks of life and help them to understand the basic concepts of Indian constitution.
- 2 To identify the importance of fundamental rights as well as fundamental duties.
- 3 To understand the functioning of Union, State and Local Governments in Indian federal system.
- 4 To learn procedure and effects of emergency, composition and activities of election commission and amendment procedure.
- 5 To acquire knowledge to appear for competitive examinations.

UNIT-I

9 Hrs

Historical Background – Constituent Assembly of India – Philosophical Foundations of The Indian Constitution – Preamble – Constitutional amendments

UNIT-II

9Hrs

Fundamental Rights – Directive Principles of State Policy – Fundamental Duties – Citizenship – Constitutional Remedies for Citizens;

UNIT-III

9 Hrs

Union Government – Structures of the Union Government and Functions – President – Vice President – Prime Minister – Cabinet – Parliament – Supreme Court of India – Judicial Review.

UNIT-IV

9 Hrs

State Government – Structure and Functions – Governor – Chief Minister – Cabinet – State Legislature – Judicial System in States – High Courts and other Subordinate Courts.

UNIT-V

9 Hrs

Statutory Institutions -Elections-Election Commission of India, National Human Rights Commission, National Commission for Women; Local Self Government; Lok pal.

Course Outcomes:

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

1. Understand and explain the significance of Indian Constitution as the fundamental law of the land.
2. Exercise his fundamental rights in proper sense at the same time identifies his responsibilities in national building.
3. Analyze the Indian political system, the powers and functions of the Union, State and Local Governments in detail
4. Understand Electoral Process, Emergency provisions and Amendment procedure.
5. Take part in competitive examinations with confidence.

Text Books:

1. Durga Das Basu, "Introduction to the Constitution of India ", Prentice Hall of India, New Delhi.
2. R.C.Agarwal, (1997) "Indian Political System", S.Chand and Company, New Delhi.

Reference Books:

1. Sharma, Brij Kishore, "Introduction to the Constitution of India", Prentice Hall of India, New Delhi.
2. The Constitution of India (2022) :
<https://cdnbbsr.s3waas.gov.in/s380537a945c7aaa788ccfcdf1b99b5d8f/uploads/2023/05/2023050195.pdf>
3. Refer the website through the link given for Constitution of India in various Indian Languages <https://legislative.gov.in/constitution-of-india/>
4. Indian Constitution at Work by National Council of Educational Research and Training, Sri Aurobindo Marg, New Delhi

Course Description:

This course is about to learn ethical hacking and security challenges in computer networking. Which addresses the data security issues and types of attacks includes malwares, viruses, sniffer and denial of service. It teaches ethical responsibilities, professional integrity and making appropriate use of the tools and techniques.

Course Objectives:

The objective of this course is to make students to:

1. Know the concepts of hacking, ports and penetration testing
2. Understand the foot printing types and techniques of scanning
3. Understand the process of system hacking, trojans and backdoors
4. Apply the concepts of sniffing, packet analysis & session Hijacking
5. Learn the ethical issues and responsibilities associated with ethical hacking

UNIT-I**9 Hrs**

Introduction to Hacking: Hacking, Types and phases of hacking. Introduction to Ports & Protocols: Ports, Protocols, Primary Network Types. Introduction to Penetration Testing: Penetration test, Categories and Types of Penetration tests, Structure of Penetration Test Report.

UNIT-II**9 Hrs**

Foot printing: Foot printing, Types, Using ping and ns Lookup commands in Windows command line. Scanning: Scanning, Basics of Scanning, Basic Techniques of Scanning, Enumerating DNS using dns enum, Performing flag scan using hping3.

UNIT-III**10 Hrs**

Issues Hacking into System: System Hacking, Password Cracking, Default password databases, Manual and Automated Password Cracking, Process of System Hacking, Using Keyloggers. Trojans & Backdoors: Trojans, Working of Trojan, Infection Techniques, Attack, Lifecycle and Classification of Virus, Worms, Virus Construction Kit.

UNIT-IV

9 Hrs

Types, Sniffing, Packet Analysis & Session Hijacking: Sniffing, Packet Analysis, Types of Sniffing, Active and Passive Sniffing Techniques, Session Hijacking. Cryptography: Cryptography, Digital Signature, Hash Functions.

UNIT-V

8 Hrs

An introduction to the particular legal, professional and ethical issues likely to face the domain of ethical hacking. Ethical responsibilities, professional integrity and making appropriate use of the tools and techniques associated with ethical hacking.

Course Outcomes:

At the end of the course, student will be able to

1. Explain the concepts related to hacking, ports and protocols, penetration testing
2. Determine the applicable foot printing techniques and scanning methods
3. Explain the process of system hacking and explain the concepts Trojans, backdoors, worms and virus and it's countermeasures
4. Demonstrate systematic understanding of the concepts of sniffing and cryptography
5. Understand the legal and professional responsibilities of ethical hacking

Text Books:

1. Jiawei Hacking: Be a Hacker with Ethics, Harsh Bothra, Khanna Publications, 2019.
2. Ethical Hacking and Penetration Testing Guide, Rafay Baloch, 2014.

Reference Books:

1. Alex Berson Kali Linux Wireless Penetration Testing Beginner's Guide, Vivek Ramachandran, Cameron Buchanan, Packt Publishing, 2015.
2. SQL Injection Attacks and Defense, 1st Edition, Justin Clarke-Salt, Syngress Publication.
3. Mastering Modern Web Penetration Testing, Prakhar Prasad, Packt Publishing, October 2016.

TAUT1201E

FUNDAMENTALS OF COMPUTERS

**L T P C
3 0 0 3**

Course Description:

The course is designed to aim at imparting a basic level appreciation program. The incumbent can use the computer for basic purposes of preparing his personnel/business letters, viewing information on the Internet (the web), sending mail, using internet banking services, etc. and allows to become digitally literate.

Course Objectives:

The objective of this course is to make students to:

1. To introduce the fundamental concepts of computers, including their characteristics, types, and applications.
2. To explain the functional components of a computer and various input/output devices.
3. To understand different types of computer memory and storage devices.
4. To introduce computer languages and software, including algorithms and programming languages and provide an overview of operating systems and basic networking concepts.
5. To introduce the components and practical applications of MS Office.

UNIT-I

9 Hrs

Introduction to Computer: Computer Characteristics, Concept of Hardware, Software, Evolution of computer and Generations, Types of Computers–Analog and Digital computers, Hybrid Computers, General Purpose and Special Purpose Computers, Limitations of Applications of Computer in Various Fields.

UNIT-II

9 Hrs

Structure and Working of Computer: Functional Block Diagram of Computer. CPU, ALU, Memory UNIT-, Bus Structure of Digital Computer–Address, Data and Control Bus.

Input/Output Devices: Input Device– Keyboard, Mouse, Scanner, MICR,OMR. Output Devices–VDU, Printers– Dot Matrix, Daisy-wheel, Inkjet, Laser, Line Printers and Plotters.

UNIT-III

9 Hrs

Computer Memory: Memory Concept, Memory Cell, Memory Organization, Semiconductor Memory – RAM, ROM, PROM, EPROM, Secondary Storage Devices – Magnetic Tape, Magnetic Disk (Floppy Disk and Hard Disk.), Compact Disk.

Computer Language and Software: Algorithm, Flowcharts, Machine Language, Assembly Language, High Level Language, Assembler, Compiler, Interpreter. Characteristics of Good Language. Software – System and Application Software.

UNIT-IV

9 Hrs

Operating System: Operating System, Evolution of Operating System. Functions of Operating System. Types of Operating Systems. Detailed Study of Windows Operating System. Introduction and Features of LINUXOS.

Networking: Concept, Basic Elements of a Communication System, Data Transmission Media, Topologies, LAN, MAN, WAN, Internet

UNIT-V

9 Hrs

MSOffice: Introduction to MS Office, Components and Features. **MSWord:** Creating Letter, Table, Fonts, Page Layout Document, Formatting, Spell Check, Print Preview, Template, Color, Mail Merge, AutoText, Inserting Picture, WordArt.

MS Excel: Introduction to Excel, Sorting, Queries, Graphs, Scientific Functions.

PowerPoint: Introduction to PowerPoint, Creation of Slides, Inserting Pictures, Preparing Slide Show with Animation. **MS Access:** Creation and Manipulation of Files.

Course Outcomes:

Upon completion of the course, student will be able to:

1. Understand the basic characteristics, types, and applications of computers.
2. Comprehend the functional components and input/output devices of a computer.
3. Describe various memory types and secondary storage devices.
4. Differentiate between machine, assembly, and high-level languages and their associated tools. Understand the role and types of operating systems, with knowledge of Windows and Linux, and basic networking concepts.
5. Utilize MS Word, Excel, PowerPoint, and Access for practical applications.

Text Books:

1. Peter Norton: Computing Fundamentals. 6th Edition, Mc Graw Hill-Osborne, 2007.
2. Sarita Dhawale, Thakur Akash Ashok: Fundamentals of Computer, Thakur Publication Pvt. Ltd.

Reference Books:

1. Deborah Morley and Charles S. Parker; Fundamentals of Computers; Cengage Learning, India edition; 2009.
2. Alex is Leon and Mathews Leon; Fundamentals of Information Technology; Vikas Publication, Chennai.
3. Francis Scheid; Theory and Problems of Introduction to Computer Science Schaum's Outline Series; Tata Mc Graw Hill publication.

Course Description:

The course is important for professionals from the point of creating engendered perspectives and sensitivity toward issues concerning women, men, and sexual minorities. It further reaffirms the belief in the importance of grassroots experiences and narratives while dealing with gender issues.

Course Objectives:

1. Understand key concepts, and issues in gender and development
2. Understand the social construction of gender and develop gender perspectives in analyzing social realities
3. Understand how the gender dynamics of power and inequality play out in the social institutions of households, markets, and states and within the arena of civil society.
4. Create awareness about the magnitude of gender disparities in the present context
5. Examine through the gender lens, the interlinkage between cultural practices social processes, and development approaches

UNIT-I Basic Concepts and Theories of Feminism**10 Hrs**

Concepts- gender, gender studies, gender identity, gender role stereotyping, gender division of labor, gender discrimination, gender equality, and equity. Overview of feminist theories – Liberal feminism, Radical Feminism, Black feminism, postmodern feminism, Eco- feminism; The international background to the Women’s Movement, The genesis of the Women’s Movement in India. Contemporary Contestations – Intersex and Transgender Movements. Feminist thinkers in the 18th, 19th, 20th, and 21st Centuries.

UNIT-II Gender Issues**10 Hrs**

Major gender issues – national and global - causes and consequences., LGBTQIA+ issues (Gender violence in private and public spaces: Domestic violence, Dowry, trafficking in women and children, rape, sex-selective abortion, female infanticide, female foeticide, child marriage, prostitution • Gender, leadership, and workplace; Sexual Harassment at Workplace). Gender-based violence, patriarchy, sexism, racism, casteism, economic inequality, and misogyny. Gender and health (Physical and mental), reproductive health, and sexuality. Feminization of poverty. Issues of the rights of sexual minorities and transgender - Article 377 and beyond.

UNIT-III Gender Perspectives in Development**10 Hrs**

Gender Analysis Tools: Gender budgeting, Gender mainstreaming, SIG, Gender Parity Index, Gender Inequality Index, Human Development Index, Gender Development Index, Gender Empowerment Measure, Approaches to development-- Women in Development (WID), Women and Development (WAD), Gender and Development(GAD), Millennium Development Goals, and Sustainable Development Gender Analysis Frameworks; Gender blind; neutral and redistributive policies; Welfare, Efficiency and Empowerment approaches

to Gender; Strategic and practical gender needs/interests; Case Studies to understand the engagement with gender, (Poverty alleviation Forestry; Drinking Water and Sanitation; Health programmes, Urban renewal and slum rehabilitation Programmes, and micro-credit programmes like SHGs.

UNIT-IV Mechanisms Addressing Issues and Best Practices

10 Hrs

Constitutional and legislative safeguards, policies, and programmes • Institutional mechanisms: National Commission for Women, Rashtriya Mahila Kosh, Crime Against Women Cell, Family Court, Family Counselling Centers and Crisis intervention centers • Best practices to address disparity, violence, and safety issues, International initiatives world conferences, women's decade, CEDAW. Indian initiatives – Towards Equality Report, National Perspective Plan for women, National Policy for the Empowerment of Women-2001, National and State women's Commissions, Nirbhaya, Women Development Corporation; Legal remedies and Social Welfare Services available to Women Facing Violence.

UNIT-V Gender and Media

5 Hrs

Discourse on Women and Media Studies- Mainstream Media, Feminist Media. • Coverage of Women's issues, sexual minorities, and issues of women in Mass Media and Media Organizations (Audio-Visual and Print media). • Digital Media and legal protection (cybercrimes and laws). • Alternative Media – Folk Art, Street Play and Theatre. • Indecent Representation of Women (Prohibition) Act, 1986, Pornography, Impact of media on Gender. Construction of masculinity and femininity in media.

Course Outcomes:

By the end of the course, students should be able to:

1. Understand the concept of gender and the social construction of femininity and masculinity
2. Develop sensitivity towards the existing practices leading to gender discrimination and marginalization in society.
3. Develop the ability to identify social, economic and political systems that adversely affect the well-being and functioning of women.
4. Suggest affirmative action in planning to promote gender equity, equality, and safety for women and sexual minorities
5. Understand the major theoretical and empirical issues that emerge in the gender field.

Text Books:

1. Nalini Visvanathan (Ed.), (2006) The Women, Gender and Development Reader, Zubaan, New Delhi
2. Kannabiran, Kalpana & Ritu Menon. 2007. From Mathura to Manorma: Resisting Violence Against Women, New Delhi: Women Unlimited

Reference Books:

1. Seth, M. 2001. Women and Development: The Indian Experience. New Delhi: Sage Publications.
2. Banerjee, N; S. Sen & N. Dhawan. 2011. Mapping the Field: Gender Relations in Contemporary India, Volume 1, Kolkata: Stree
3. Bose, C.E. & Minjeong Kim. 2009. Global Gender Research: Transnational Perspectives, New York: Routledge

Notes

1. <https://www.studocu.com/row/document/kohat-university-of-science-and-technology/gender-studies/gender-studies-new-lecture-notes-1-7/5176872>
2. <https://teentalk.ca/learn-about/gender-identity/#:~:text=There%20are%20many%20different%20gender,or%20a%20combination%20of%20these.>
3. <https://genderspectrum.org/articles/understanding-gender>

Course Description:

This course provides a comprehensive introduction to the fundamental concepts of leadership. Students will gain knowledge of different leadership levels and styles, and understand the significance of vision and strategy formulation.

Course Objectives:

1. Understand the basic concepts of leadership
2. Knowledge of leadership development strategy
3. Knowledge of leadership development approaches
4. Knowledge of leadership traits
5. Awareness on self-awareness exercises.

UNIT-I**9 Hrs**

Understanding Leadership-Defining Leadership; Leadership styles, Entrepreneurial leaders, Different levels of leaders

UNIT-II**9 Hrs**

Strategy formulation- formulation of vision, Strategy formulation and communication, role of the leader in managing change, foundation for effective team development

UNIT-III**9 Hrs**

Leadership development approaches- Significance of leadership development strategy, leadership development approaches- One-to-one coaching, Mentor schemes, Role of HR and development, Buddy pairs, Action learning sets, Work-based projects

UNIT-IV**9 Hrs**

Recognizing Leadership Traits-Historical Leaders; Traits Leaders Display, Leadership Studies: What Traits Do Effective Leaders Exhibit.

UNIT-V**9 Hrs**

Recognising self - Exercises of Self-awareness using Johari Window, Development diaries, Feedback exercises, Personal vision setting

Course Outcomes:

1. Understand the basic concepts of leadership
2. Understand the significance of vision and strategy formulation
3. Knowledge of leadership development approaches.
4. Knowledge of leadership traits.
5. Knowledge of self awareness techniques

Text Books:

1. Rosemary Ryan, Leadership Development - A guide for HR and Training professionals, ELSEVIER, UK
2. Kim S. Cameron, Positive Leadership: Strategies for Extraordinary Performance,

Reference Books:

1. Manuel London, Leadership Development: Paths To Self-insight and Professional Growth, Psychology Press, New York.
2. Susan E. Murphy, Ronald E. Riggio, The Future of Leadership Development, Routledge is an imprint of Taylor & Franci

TAUT1201H**MATHEMATICAL THINKING****L T P C
3 0 0 3****Course Description:**

Mathematical Thinking is a university elective course that teaches fundamental concepts of basic algebraic and mathematical operations. After learning this course, students will easily be able to learn more problems solving skills and use this course for practicing. The course emphasizes problem-solving skills and analytical thinking, and equips students with the skills necessary to tackle real-world problems using basic mathematical and arithmetical concepts.

Course Outcomes:

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

1. To familiarize the students with the fundamental concepts of basic numbers, mathematical operations, and divisibility rules
2. Summarize the basic concepts mathematical operations on numbers and calculate LCM, GCD to solve simple problems.
3. Compute To probability concepts and statistical methods in various applications engineering.
4. Understand the formula for evaluate the square root and cube root of different types numbers
5. Impart the arrangements and selections of things and counting numbers and check for independence of events.

UNIT-I**9 Hrs**

Number system and Tests of Divisibility: Digits, numbers, Indian-Hindu-Arabic system, Roman Numbers, Face Value and Place values, Various Types of Numbers or Standard Numbers, Prime number, composite numbers, Perfect Numbers, Co-primes (or) Relative Primes, Twin primes, perfect numbers, Testing of prime numbers, Mathematical operations on even and odd numbers.

UNIT-II**9 Hrs**

LCM and GCD or HCF: Factors and Multipliers, Highest Common Factor (H.C.F.) or Greatest Common Measure (G.C.M.) or Greatest Common Divisor (G.C.D.) factorization method, division method, finding the H.C.F. of more than two numbers, factorization method of finding L.C.M, H.C.F. and L.C.M. of fractions.

UNIT-III**9 Hrs**

System Simplifications: BODMAS' Rule, Modulus of a Real Number, Virnaculum (or Bar), Algebraic identities, set theory operations (union, intersection, complements).

UNIT-IV**9 Hrs**

Square Roots, Cube Roots, averages and percentages: Square Root, cube root, Problems on numbers, concept of averages, problems on averages, concept of percentage and problems on percentages.

UNIT-V**9 Hrs**

Permutations, combinations and Probability: Fundamental principle with respect of addition and multiplication, permutations, combination, relation between permutation and combination, Random experiment, sample space and basic problems of events of a probability.

Course Outcomes:

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

1. To explain fundamental concepts of basic number system, including standard numbers, mathematical operations, and divisibility rules.
2. To apply mathematical operations on numbers and calculate lcm, gcd to solve simple problems.
3. To evaluate the arrangements and selections of things and counting numbers.
4. To understand the simplifications by using identities and apply the different kinds of operations on the numbers.
5. To evaluate square root and cube root of different types numbers and calculate appropriate solutions for different problems.

Text Books:

1. Quantitative Aptitude Text Book, Dr.RS.Agrwal.
2. Quantitative Aptitude, Text Book,S.Chandu.
3. Andhra Pradesh Academy of IPE text books.

Reference Books:

1. Quantitative Aptitude, Text Book, Quicker Mathematics ,second edition
2. Quantitative Aptitude, Text Book,Abjuirh guwaha,Fourth edition
3. www.online quantitative aptitude testseries.com
4. Quantitative Aptitude, GSR Publications,Gunturu,third edition
5. Quantitative Aptitude, verbal reasoning,Guptha publication,3rd edition
6. www.enaduprathibaonline.com and www.sakshionlineseries.com

TAUT1201I**NURSING****L T P C
3 0 0 3****Course Description:**

This module is designed to help the students to acquire comprehensive knowledge in basic concepts of Health, Nursing, Vital signs, Basic Life support, home care management of Diabetes & Hypertension and Adolescent health.

Course Objectives:

Students undergoing this course are expected to:

1. Understand the concept of health, illness, and Nursing
2. Learn the technique of assessing and monitoring vital signs
3. Perform BLS using evidence based national or international guidelines in the management of adult victims with the cardiac arrest.
4. Understand the concept of home care management of Diabetes and Hypertensive persons
5. Develop understanding about the normal growth and development, needs and health issues of adolescents

UNIT-I**03 Hrs**

Concepts of Health and Nursing: Definition of Health and ill ness, Health-illness continuum, Factors influencing Health, Nursing as a profession and Career ladder.

UNIT-II

12 Hrs

Vital signs: Temperature: Physiology, regulation, factors affecting body temperature, Assessment of body temperature: sites, technique and special considerations.

Pulse: Physiology & regulation, characteristics of the pulse, factors affecting pulse, Assessment of the pulse: sites, location, technique and special considerations.

Respiration: Physiology and regulation, mechanics of breathing, characteristics of the respiration, factors affecting respiration, Assessment of respiration: technique and special considerations.

Blood pressure: Physiology and regulation, characteristics of the blood pressure, factors affecting blood pressure. Assessment of blood pressure: sites, equipment and technique and special considerations. Recording of vital signs.

Pain: Definition, types physiology of pain and factors influencing the pain

UNIT-III

8 Hrs

Basic life support / basic cardiopulmonary life support (BLS/BCLS)

Introduction, definition, purposes, indications, contraindications and steps in procedure.

UNIT-IV

12 Hrs

Home care management of Diabetes and Hypertension

Diabetes- Introduction to Diabetes Mellitus – A National and Global burden: Classification, risk factors, pathophysiology, manifestations, screening, diagnostic criteria and complications, The treatment Modalities of Diabetes Mellitus: (Life style modifications Diet therapy, Exercise, Medical Management, Self-Management, Practical Aspects: Blood Glucose monitoring, Diabetic foot care, Exercises, Diabetic Diet Planning, Self-Insulin administration)

Hypertension- Introduction to Hypertension, Types, risk factors, pathophysiology ,manifestations, diagnostic criteria and complications, treatment modalities : life style modifications, Diet therapy Exercise ,Medical management

UNIT-V

10 Hrs

Adolescent Health: Growth and Development of adolescent, Nutritional and developmental needs of adolescent, Common health problems including mental health problems, Reproductive and sexual health issues

Course Outcomes:

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

1. Acquire a thorough knowledge on concept of health and illness.
2. Demonstrate skills in monitoring the vital signs
3. Develop skills in performing BLS/BCLS
4. Able to attain knowledge and skills on treatment modalities of DM
5. Aware of normal Growth and development and common health problems in adolescent

Text Books:

1. Potter and perrys, Fundamentals of Nursing,4th edition, Mosby, Elsevier publication
2. Lewis, textbook of Medical Surgical Nursing 4th South Asian edition, Elsevier publication
3. Dorothy R. Marlow, Text book of paediatric nursing, sixth edition, Elsevier publications,

Reference Books:

1. Joyce M black textbook of medical surgical nursing ,8th edition, Elsevier publications,
2. Kozier and Erbs, textbook of fundamentals of Nursing, Elsevier publications.

TAUT1201J**ONE HEALTH****L T P C
3 0 0 3****Course Description:**

This course introduces students to the One Health approach, an interdisciplinary approach that recognizes the interconnectedness of human, animal and environmental health. Students will learn about the history of One Health, its relevance to global health and its role in addressing a range of health challenges, including zoonotic diseases, environmental health hazards and antimicrobial resistance. The course will also explore current and emerging One Health challenges and innovations and the ethical considerations of One Health research and practice.

Course Objectives:

1. To explain the relevance of One Health to global health.
2. To understand the interdisciplinary nature of One Health research and practice.
3. To analyze the impact of environmental health hazards on human and animal health.
4. To identify emerging One Health challenges and innovations.
5. To evaluate ethical considerations in One Health research and practice.

UNIT-I**9 Hrs**

Overview of One Health and its relevance to global health, Definition of One Health and its history, Examples of One Health challenges, such as zoonotic diseases and antimicrobial resistance, The role of inter-disciplinarity in One Health research and practice, Global One Health initiatives and their impact

UNIT-II

9 Hrs

Environmental health and its relationship to One Health, Overview of environmental health and its impact on human and animal health, Environmental risks to health, such as pollution and climate change, Case studies highlighting the impact of environmental hazards on human and animal health, The role of One Health in addressing environmental health challenges

UNIT-III

9 Hrs

Zoonotic diseases and One Health, Overview of zoonotic diseases and their impact on human and animal health, The ecology of zoonotic diseases and how they emerge and spread, Case studies of major zoonotic disease outbreaks, such as Ebola and COVID-19, The One Health approach to preventing and controlling zoonotic diseases.

UNIT-IV

9 Hrs

Antimicrobial resistance and One Health, Overview of antimicrobial resistance and its impact on human and animal health, the relationship between antimicrobial use in animal agriculture and human health, the role of One Health in addressing the global challenge of antimicrobial resistance, Case studies of One Health approaches to controlling antimicrobial resistance, such as the WHO Global Action Plan

UNIT-V

9 Hrs

Future directions in One Health research and practice, Emerging One Health challenges-food security and emerging infectious diseases, Innovations in One Health research and practice, such as digital technologies and genomics, Opportunities for One Health collaboration across sectors and disciplines, Ethical considerations in One Health research and practice.

Course Outcomes:

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

1. Describe the One Health approach and its relevance to global health
2. Analyze the impact of environmental health hazards on human and animal health
3. Evaluate the role of One Health in addressing zoonotic diseases and controlling antimicrobial resistance
4. Identify emerging One Health challenges and innovations
5. Discuss ethical considerations in One Health research and practice

Text Books:

1. One Health: People, Animals and the Environment by Ronald M. Atlas and Stanley Maloy
2. One Health: The Human-Animal-Environment Interfaces in Emerging Infectious Diseases by John S. Mackenzie and Martyn Jeggo

Reference Books:

1. One Health: The Theory and Practice of Integrated Health Approaches edited by Jakob Zinsstag, Esther Schelling, David Waltner-Toews and Maxine Whittaker
2. One Health and the Politics of Antimicrobial Resistance edited by Laura H. Kahn, Bruce Kaplan and Thomas P. Monath
3. The One Health Initiative: A Global Movement to Achieve Sustainable Health and Well-being edited by Bruce Kaplan and Thomas P. Monath.

BASIC EMERGENCY CARE AND LIFE SUPPORT SKILLS**TAUT1201K****L T P C
3 0 0 3****Course Description:**

This course introduces students to the fundamental skills required for providing basic emergency care and life support. It covers essential techniques in CPR, AED use, and basic first aid to prepare students for real-life emergency situations.

Course Objectives:

Students undergoing this course are expected to:

1. To understand the principles and techniques of basic life support.
2. To acquire essential first aid skills.
3. To know the use of AED
4. To get trained in the practical aspects of CPR.
5. To know the various assessment aspects of a patient in an emergency

UNIT-I Basic Life Support (BLS) and CPR**9 Hrs**

Introduction to BLS and CPR, Steps of Adult, Child, and Infant CPR, Airway Management, Rescue Breathing and Chest Compressions

UNIT-II Automated External Defibrillator (AED)**9 Hrs**

What is an AED? When and How to Use an AED, Safety Precautions, Different types of Defibrillators

UNIT-III Basic First Aid Technique**9 Hrs**

Principles of First Aid, Managing Bleeding and Wounds, Fractures and Sprains, Burns and Scalds.

UNIT-IV Recognizing Medical Emergencies**9 Hrs**

Identifying Common Medical Emergencies, Initial Assessment and Response, Managing Breathing and Cardiac Emergencies.

UNIT-V Practical Skills Practice**9 Hrs**

Hands-on CPR Practice, AED Operation Drills, First Aid Skills Practice, Scenario-Based Training

Course Outcomes:

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

1. Acquire a thorough knowledge of the principles and techniques of basic life support.
2. Apply essential first aid skills.
3. Demonstrate the use of AED in Emergencies.
4. Demonstrate the practical aspects of CPR
5. Evaluate various assessment plans by the specific emergency.

Text Books:

1. "Basic Life Support Provider Manual" by American Heart Association Pang, Ning Tan, Michael Steinbach and Vipin Kumar "Introduction to Data Mining", Pearson Education, 2007.
2. "First Aid Manual" by St. John Ambulance

Course Description:

This course provides an essential foundation in health management, focusing on key areas such as basic life support, first aid, stroke management, and the prevention and management of both communicable and non-communicable diseases. Students will develop practical skills and knowledge to effectively manage health-related situations in various settings.

Course Objectives:

Students undergoing this course are expected to:

1. To understand the principles and techniques of basic life support.
2. To acquire essential first aid skills.
3. To comprehend the causes, symptoms, and management of stroke.
4. To learn about non-communicable diseases, their risk factors, and management strategies.
5. To understand communicable diseases, their transmission, prevention, and control.

UNIT-I Basic Life Support**9 Hrs**

Overview of Basic Life Support (BLS), Cardiopulmonary Resuscitation (CPR) Techniques, Use of Automated External Defibrillators (AEDs), Airway Management and Breathing Support, BLS Protocols and Procedures.

UNIT-II First Aid**9 Hrs**

Introduction to First Aid Principles, Managing Wounds and Bleeding, Fractures and Musculoskeletal Injuries, Burns and Scalds Treatment, Handling Medical Emergencies (e.g., heart attack, choking, seizures)

UNIT-III Stroke**9 Hrs**

Understanding Stroke: Types and Causes, Symptoms and Warning Signs of Stroke, Immediate Response and Management, Stroke Rehabilitation and Recovery, Prevention and Risk Reduction Strategies

UNIT-IV Non-Communicable Diseases**9 Hrs**

Definition and Classification of Non-Communicable Diseases (NCDs), Common NCDs: Cardiovascular Diseases, Diabetes, Cancer, Chronic Respiratory Diseases, Risk Factors and Prevention Strategies, Management and Treatment Approaches, Public Health Implications and Policy Responses

UNIT-V Communicable Diseases

9 Hrs

Introduction to Communicable Diseases, Modes of Transmission and Epidemiology, Prevention and Control Measures (e.g., vaccination, hygiene, quarantine), Management of Common Communicable Diseases (e.g., TB, HIV/AIDS, Influenza), Emerging Infectious Diseases and Global Health Security

Course Outcomes:

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

1. Perform basic life support techniques.
2. Administer essential first aid.
3. Recognize and manage stroke symptoms and treatments.
4. Understand and address non-communicable diseases.
5. Implement communicable disease control measures.

Text Books:

1. "Basic Life Support Provider Manual" by American Heart Association
2. "First Aid Manual" by St. John Ambulance, St. Andrew's First Aid, and the British Red Cross

Reference Books:

1. "Stroke: Practical Guide to Management" by Charles P. Warlow
2. "Non-Communicable Diseases in the Developing World" by Rachel Nugent
3. "Communicable Disease Control and Health Protection Handbook" by Jeremy Hawker et al.

Course Description:

This course provides an in-depth understanding of entrepreneurship, its applications, and its scope. Students will learn to generate broad ideas for starting an enterprise or startup and convert them into viable opportunities. The course covers the essentials of managing startups, understanding small and medium enterprises, and gaining knowledge of various financial institutions.

Course Objectives:

1. Understand the concept of Entrepreneurship, its applications and scope.
2. Application of knowledge for generating a broad idea for a starting an enterprise/start up and converting to opportunity.
3. Knowledge of managing the start-up's
4. Understand the small and medium enterprises
5. Knowledge of different financial institutions

UNIT-I**9 Hrs**

Entrepreneurship: Definition and Concept of entrepreneurship - Entrepreneur Characteristics – Classification of Entrepreneurs –Role of Entrepreneurship in Economic Development

UNIT-II**9 Hrs**

Idea to Opportunity- Introduction, Sources of New Ideas, Techniques for Generating Ideas, Assessing Business Potential of an Idea, Opportunity Recognition, Sources and process, Indian Economy—Opportunities, Steps Involved in Tapping Opportunity

UNIT-III**9 Hrs**

Entrepreneurship Development - Intrapreneurship, Entrepreneurship as a Career Option, Female Entrepreneurship and problems, Types of Start-ups, Start-ups and mistakes, Managing Start-ups During Downturn

UNIT-IV**9 Hrs**

Entrepreneurship Trends- Small and Medium Business Enterprises, International Entrepreneurship, Entrepreneurship—Emerging Trends in the Global Knowledge Economy

UNIT-V**9 Hrs**

Institutions Supporting and Taxation Benefits: Central level Institutions: NABARD; SIDBI,— State Level Institutions –DICs – SFC - Government Policy for MSMEs - Tax Incentives and Concessions.

Course Outcomes:

1. Basic understanding of entrepreneurship
2. Knowledge of idea generation and opportunities identification of entrepreneurship
3. Understand different forms of enterprises
4. Understand different emerging trends of entrepreneurship
5. Knowledge of different financial institutions

Text Books:

1. Arya Kumar, Entrepreneurship, Pearson, Delhi
2. Poornima MCH, Entrepreneurship Development –Small Business Enterprises, Pearson, Delhi

Reference Books:

1. Anil Kumar, S., ET.al., Entrepreneurship Development, New Age International Publishers, New Delhi
2. Khanka, SS, Entrepreneurship Development, S. Chand, New Delhi
3. Peter F. Drucker, Innovation and Entrepreneurship
4. A.Sahay, M. S. Chhikara, New Vistas of Entrepreneurship: Challenges & Opportunities

Course Description:

This course provides a solid foundation in the fundamentals of economics and managerial economics. Students will learn to apply concepts of production cost and revenues for effective business decisions. The course also covers analyzing capital investments to maximize returns, understanding different forms of business organizations, and evaluating business organizations and marketing strategies.

Course Objectives:

1. Understand the fundamentals of Economics and Managerial economics
2. Apply the Concept of Production cost and revenues for effective Business decision
3. Analyze how to invest their capital and maximize returns.
4. Understand different forms of business organizations
5. Evaluate Business organizations and marketing strategies

UNIT-I**9 Hrs**

Introduction: Meaning, Nature, Significance, Functions, and Advantages, ME and its role in other fields. Demand - Concept, Function, Law of Demand - Demand Elasticity- Types – Measurement. Demand Forecasting- Factors governing forecasting and methods.

UNIT-II**9 Hrs**

Production: Introduction – Nature, meaning, significance, functions and advantages. Production Function– Least-cost combination– Short run and Long run Production Function- Isoquants and Isocosts, MRTS - Cobb-Douglas Production Function - Laws of Returns

UNIT-III**9 Hrs**

Cost & Break-Even Analysis - Cost concepts and Cost behavior- Break-Even Analysis (BEA) - Determination of Break-Even Point (Simple Problems)-Managerial significance and limitations of Break-Even Analysis.

UNIT-IV**9 Hrs**

Business Organizations Introduction – Nature, meaning, significance, functions and advantages. Forms of Business Organizations- Sole Proprietary - Partnership - Joint Stock Companies - Public Sector Enterprises.

UNIT-V**9 Hrs**

Markets Types of Markets - Perfect and Imperfect Competition - Features of Perfect Competition Monopoly- Monopolistic Competition–Oligopoly-Price-Output Determination - Pricing Methods and Strategies.

Course Outcomes:

1. Basic understanding of managerial economics
2. Develop an understanding of the applications of production
3. Interpret cost analysis
4. Understand different forms of business organizations.
5. Analyse the causes and consequences of different market conditions.

Text Books:

1. Varshney & Maheswari: Managerial Economics, Sultan Chand, 2013.
2. Aryasri: Business Economics and Financial Analysis, 4/e, MGH, 2019.

Reference Books:

1. Ahuja HI Managerial economics Schand,3/e,2013
2. S.A. Siddiqui and A.S. Siddiqui: Managerial Economics and Financial Analysis, New AgeInternational, 2013.
3. Joseph G. Nellis and David Parker: Principles of Business Economics, Pearson, 2/e, NewDelhi.

Course Description:

By the end of the course, students will be equipped with the knowledge and skills to plan, establish, and manage organic farms effectively. This course serves as a foundation for aspiring organic farmers, agricultural professionals, and individuals interested in sustainable food production and environmental conservation.

Course Objectives:

1. To Understand the principles and practices of organic farming.
2. To Analyze the environmental, economic, and social implications of conventional versus organic agricultural systems.
3. To Apply organic farming techniques to enhance soil health and fertility.
4. To Examine the certification processes and regulations governing organic farming.
5. To explore ways to engage with local communities and promote organic practices.

UNIT-I**9 Hrs**

Introduction to Organic Farming, Overview of organic farming principles and practices, Historical development and evolution of organic agriculture, Importance of organic farming in sustainable agriculture, Comparison between conventional and organic farming systems, Certification and regulatory requirements for organic farming.

UNIT-II**9 Hrs**

Soil Health and Management, Importance of soil health in organic farming, Soil composition and structure, Soil fertility management without synthetic inputs, Soil conservation techniques: cover cropping, crop rotation, mulching, Composting and vermicomposting for organic matter enrichment.

UNIT-III**9 Hrs**

Crop Management in Organic Systems, Selection of suitable crops for organic farming, Organic seed selection, saving, and sourcing, Crop planning and rotation strategies, Weed management without herbicides: mechanical, cultural, and biological control methods, Pest and disease management in organic systems: integrated pest management (IPM), biological control, and natural remedies.

UNIT-IV**9 Hrs**

Organic Livestock Management, Principles of organic livestock production, Organic feed sourcing and formulation, Housing and space requirements for organic livestock, Health care and disease management without antibiotics and synthetic chemicals, Organic certification requirements for livestock operations.

UNIT-V

9 Hrs

Marketing and Economics of Organic Farming, Market trends and consumer demand for organic products, Certification and labeling requirements for organic products, Marketing strategies for organic farmers: direct sales, farmers markets, CSA (Community Supported Agriculture), Economic viability and Community Supported Agriculture), Economic viability and profitability of organic farming, Government support programs and incentives for organic farmers.

Course Outcomes:

Upon completion of the course the student shall be able to,

1. Demonstrate a comprehensive understanding of the principles of organic farming and their application in agricultural systems.
2. Critically evaluate the sustainability of different agricultural practices, considering environmental impact, economic viability, and social equity.
3. Design and implement an organic farming plan for a specific crop or agricultural enterprise.
4. Analyze case studies and research articles to assess the effectiveness of organic farming practices in various contexts.
5. Communicate effectively about organic farming principles and practices, both orally and in writing.

Text Books:

1. "Teaming with Microbes: The Organic Gardener's Guide to the Soil Food Web" by Jeff Lowenfels and Wayne Lewis
2. "The Organic Farmer's Business Handbook: A Complete Guide to Managing Finances, Crops, and Staff - and Making a Profit" by Richard Wiswall

Reference Books:

1. "Introduction to Permaculture" by Bill Mollison
2. "Crop Rotation on Organic Farms: A Planning Manual" by Charles L. Mohler and Sue Ellen Johnson
3. "The Organic Farming Manual: A Comprehensive Guide to Starting and Running a Certified Organic Farm" by Anne Larkin Hansen

TAUT1201Q

PERSONALITY DEVELOPMENT

L T P C
3 0 0 3

Course Description:

Personality Development is a comprehensive course designed to equip undergraduates with the essential skills and knowledge required for personal growth and professional success. The course focuses on enhancing self-awareness, emotional intelligence, communication, and interpersonal skills. Students will learn how to build confidence, manage stress, and develop effective time management strategies. Additionally, the course covers critical aspects of professional development, including resume writing, interview techniques, and personal branding.

Course Objectives:

1. To develop self-awareness and emotional intelligence.
2. To enhance communication and interpersonal skills.
3. To build confidence and self-esteem.
4. To foster professional and personal growth.
5. To prepare students for successful careers and meaningful personal lives.

UNIT-I Introduction to Personality Development

9 Hrs

Definition and importance of personality development; Initial self-assessment and goal setting; Short-term and long-term goal setting; Understanding oneself: strengths, weaknesses, opportunities, threats (SWOT analysis); Values, beliefs, and attitudes; Personal vision and mission statements; Components of emotional intelligence (EQ); Self-regulation and self-motivation; Empathy and social skills.

UNIT-II Communication Skills and Interpersonal Skills

9 Hrs

Communication Skills; Verbal and non-verbal communication; Active listening and feedback; Public speaking and presentation skills; Building and maintaining relationships; Conflict resolution and negotiation; Teamwork and collaboration; Importance of cultural sensitivity in a globalized world; Developing intercultural communication skills

UNIT-III Critical Thinking, Problem Solving and Self-Esteem

9 Hrs

Enhancing analytical and critical thinking skills; Creative problem-solving techniques Decision-making process; Confidence and Self-Esteem; Building self-confidence; Overcoming self-doubt and negative thinking; Techniques for boosting self-esteem.

UNIT-IV Time Management and Stress Management

7 Hrs

Prioritization and productivity techniques; Overcoming procrastination; Identifying sources of stress; Techniques for managing and reducing stress; Work-life balance.

UNIT-V Professional Development and Leadership Skills

11 Hrs

Resume writing and job interview skills; Professional etiquette and workplace behavior
Networking skills; Traits of effective leaders; Leadership styles and theories; Developing
leadership qualities; Personal Branding, Building a personal brand; Online presence and social
media etiquette; Personal branding strategies; Final self-assessment and reflection on personal
growth

Course Outcomes:

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

1. Develop a personal vision and mission statement to guide future actions and decisions.
2. Exhibit improved verbal and non-verbal communication skills.
3. Apply strategies to boost self-confidence and maintain high self-esteem.
4. Implement effective time management techniques to enhance productivity.
5. Develop and demonstrate leadership qualities in various scenarios.

Text Books:

1. Student's Hand Book- Skill Genie-Higher Education Department, Govt. Of Andhra Pradesh -https://svimstpt.ap.nic.in/edu/skill_genie.pdf.
2. The only skill that matters- Jonathan.Levi (2019)- Super Human Enterprises, LLC. All rights reserved. ISBN:978-1-5445-0435-3

Reference Books:

1. Online courses and TED Talks on personality development and self-improvement.
2. "How to Win Friends and Influence People" by Dale Carnegie (1936) Revised- 2022.

Course Description:

This course explores the role of social entrepreneurship in societies, economies, and politics. Students will learn about the three pillars of social entrepreneurship and the different types of partners and their advantages. The course also covers the typical process steps of creating a marketing concept and describes the characteristics of the financing structure of social enterprises.

Course Objectives:

1. Understand the role of social entrepreneurship in societies, economies and politics
2. Explain the three pillars of social entrepreneurship.
3. Describe different types of partners for social entrepreneurs and their particular advantages.
4. Understand the typical process steps of a marketing conception.
5. Describe the characteristics of the financing structure of social enterprises.

UNIT-I**9 Hrs**

Introduction - Meaning of social entrepreneurship- concepts and typologies, its disparity with social business and CSR, social entrepreneur & personality, social enterprise.

UNIT-II**9 Hrs**

Drivers and scope: Role of Social Entrepreneurship in -Societies, Economies and Politics, The Drivers of Social Entrepreneurship, Size and Scope of Social Entrepreneurship, Opportunities for Social Entrepreneurs.

UNIT-III**9 Hrs**

Collaboration and Partnerships - Reasons for Crafting Collaborations, Specific Types of Collaborations, Different Collaboration Partners, Potential Risks and Challenges, Guidelines to Establish a Collaboration.

UNIT-IV**9 Hrs**

Elements of a Marketing Conception- Market analysis, Marketing Goals, Competitive Strategy, Measures, Controlling; Peculiarities Concerning Marketing for Social Enterprises, Marketing Importance for Social Enterprises.

UNIT-V**9 Hrs**

Finance- Types of Financing Instruments- Donations, Equity capital, Debt capital, Hybrid capital; Financing institutions-value banks, social investment advisors, social stock exchange, Venture Philanthropy Funds, Social Investment Funds, Funding Consultancies

Course Outcomes:

1. Knowledge of social entrepreneurship differentiation from other related concepts
2. Understand the role of social entrepreneurship in societies, economies and politics
3. Analysis of different types of partners for social entrepreneurs.
4. Understand the typical process steps of a marketing conception.
5. Awareness of the peculiarities of financial elements in social enterprises

Text Books:

1. Christine K. Volkmann & Kim Oliver Tokarski. 2012. Social Entrepreneurship and Social Business. Springer Gabler
2. Madhukar Shukla: Social Entrepreneurship in India. Sage publications

Reference Books:

1. Archana Singh (auth.) The Process of Social Value Creation: A Multiple-Case Study on Social Entrepreneurship in India. Springer India. 2016.
2. Ryszard Praszkiar; Andrzej Nowak. Social entrepreneurship : theory and practice [1 ed.]. Cambridge University Press
3. Alex Nicholls. Social Entrepreneurship: New Models of Sustainable Social Change. Oxford University Press, USA

II Semester

AHSJ1304

MICROBIOLOGY

L T P C

3 1 2 5

Course Description:

This course will cover on general properties of pathogenic bacteria, viruses, fungi and parasites along with immune mechanisms, its response, methods of sterilization and disinfection, healthcare associated infections and hospital infection control practices. It helps the student to understand the natural history of infectious diseases to deal with etiology, pathogenesis, clinical features, laboratory diagnosis, treatment and control of infections in the community including immunoprophylaxis.

Course Objectives:

Students undergoing the course shall be expected to:

- Learn the general properties, structure and physiological aspects of bacteria and identification of bacteria.
- Learn about infection, immunity, various antigen-antibody reactions, immune mechanisms and hypersensitivity reactions and various infection control practices.
- Learn about pathogenesis, laboratory diagnosis and prophylactic measures of various bacterial infections.
- Learn about general properties of viruses and fungi and morphology, pathogenesis, laboratory diagnosis and prophylactic measures of various viral and fungal infections.
- Learn about classification of parasites and their morphological forms, life cycle, pathogenesis, laboratory diagnosis and prophylactic measures of various parasitic infections.

THEORY

Total: 60 Hrs

UNIT-I

10 Hrs

INTRODUCTION TO MEDICAL MICROBIOLOGY

- Importance of Medical Microbiology
- Historical aspects

GENERAL PROPERTIES & PHYSIOLOGICAL ASPECTS OF BACTERIA

- Structure of bacteria and its appendages like capsule, flagella, pili and spore
- Classification based on morphology, arrangement and motility
- Microscopy & Staining techniques
- Bacterial Growth Curve, Nutritional requirements of bacteria

BACTERIAL IDENTIFICATION METHODS

- Culture media, Culture Methods
- Specimen collection and transport to the laboratory
- Laboratory methods of Identification of Bacteria
- Antibiotic Sensitivity testing – Diffusion and Dilution methods

UNIT-II

12 Hrs

INFECTION CONTROL PRACTICES

Infection – Definition, types and sources of infection, mode of transmission, types of infectious diseases, microbial pathogenicity

- Sterilization, Disinfection and Asepsis
- Standard Safety Precautions
- Biomedical Waste Management
- Hospital acquired infections, mode of spread, types and predisposing factors, investigation and surveillance

IMMUNOLOGY

Immunity – Definitions, terminology, Innate, acquired and herd immunity

- Antigen & Antibody
- Antigen-Antibody Reactions – Precipitation reactions, Agglutination reactions, ELISA, IFA
- Immune response
- Hypersensitivity - Definition and Classification and Type I, II, III, IV types of hypersensitivity
- Immunoprophylaxis – Immunization schedule, vaccines, storage & handling, hazards of immunization

UNIT-III

16 Hrs

PATHOGENIC BACTERIA– Morphology, pathogenicity, laboratory diagnosis and prophylaxis of the following organisms

- **Gram Positive Cocci:** Staphylococci, Streptococci & Pneumococci
- **Gram Negative Cocci:** Meningococci, Gonococci
- **Gram Positive Bacilli:** Corynebacterium diphtheriae, Clostridium perfringens, Clostridium tetani, Clostridium botulinum, Bacillus anthracis, Bacillus cereus
- **Gram Negative Bacilli:** Escherichia coli, Klebsiella, Proteus, Salmonella, Shigella, Vibrio, Bordetella, Hemophilus
- **Acid Fast bacilli:** Mycobacterium tuberculosis, Mycobacterium leprae
- **Spirochaetes:** Treponema, Borrelia, Leptospira
- Rickettsiae

UNIT-IV

12 Hrs

GENERAL VIROLOGY

- **General Properties of Viruses** – Structure, viral multiplication, viral cultivation, classification, inclusion bodies, antiviral agents
- Specimen collection and transport of viral disease samples to laboratory

PATHOGENIC VIRUSES – Morphology, Pathogenicity, laboratory diagnosis and prophylaxis of the following organisms

- RNA Viruses – Polio virus, influenza virus, mumps virus, measles virus, rubella virus, rabies virus, dengue virus, chikungunya virus, Japanese encephalitis virus,
- DNA Viruses – Herpes simplex virus, Varicella zoster virus, Epstein Barr virus, Variola, Molluscum contagiosum, Adeno virus, Human Papilloma virus
- Viral Hepatitis – Hepatitis A, B, C, D and E
- Rota Virus
- SARS Virus, Corona virus
- Human Immunodeficiency Virus (HIV)

PATHOGENIC FUNGI – Morphology, pathogenicity, laboratory diagnosis and prophylaxis of the following organisms

- Introduction, classification of fungi and fungal diseases, antifungal agents
- Superficial mycoses, subcutaneous mycoses, systemic mycoses and opportunistic mycoses
- Mycetism and mycotoxicosis

UNIT-V

10 Hrs

PARASITOLOGY – Mode of infection, pathogenicity, clinical picture, laboratory diagnosis of the following parasites

- **Protozoans:** Entamoeba histolytica, Trichomonas vaginalis, Leishmania donovani, Plasmodium spp., Toxoplasma gondii, Pneumocystis jirovecii, Cryptosporidium parvum
- **Cestodes:** Taeniasolium, Taenia saginata, Diphylobothrium latum
- **Trematodes:** Schistosoma haematobium, Fasciola hepatica, Fasciolopsis buskii, Clonorchis sinensis, Paragonimus westermanii
- **Nematodes:** Ascaris lumbricoides, Ankylostoma duodenale, Enterobius vermicularis, Strongyloides stercoralis, Wucheraria bancrofti

Course Outcomes:

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

- Describe the General Properties and physiological aspects of Bacteria, Culture media, culture methods and identification of Bacteria.
- Explain about immunity, antigen, antibody and various antigen-antibody reactions, immune mechanisms and hypersensitivity reactions along sterilization & disinfections methods and various infection control practices.
- Describe the morphology, pathogenesis, laboratory diagnosis and prophylactic measures of various bacterial infections.
- Describe the General Properties of Viruses and Fungi and morphology, pathogenesis, laboratory diagnosis and prophylactic measures of various viral and fungal infections.
- Classify the parasites and describe the morphological forms, life cycle, pathogenesis, laboratory diagnosis and prophylactic measures of various parasitic infections.

PRACTICALS

Total: 30 Hrs

Students undergoing the course shall be able to:

- Perform commonly employed bed-side tests for detection of infectious agents such as blood film for malaria, filariasis, gram staining, AFB staining, serology and stool sample for ova and cyst.
- Use the correct method of collection, storage and transport of clinical material for microbiological investigations

The assessment of the students will be done with the help of following exercises:

- Spotters
- Performing Gram stain, Acid-fast staining
- Stool Examination

Textbooks:

1. The Short Textbook of Medical Microbiology (including Parasitology): Satish Gupte
2. Medical Parasitology: C P Baveja & V Baveja
3. Ananthanarayan and Paniker's Textbook of Microbiology for Nurses

Reference Books:

1. Ananthanarayan and Paniker's Text book of Microbiology-12th Edition
2. Apurba Sastry,S; Bhat,S; Essentials of Medical Microbiology -4th Edition
3. Baveja. C.P; Text book of Microbiology – 7th Edition
4. Paniker's Text book of Medical Parasitology – 9th Edition

AHSJ1305

PATHOLOGY

L T P C

3 1 2 5

Course Description:

Pathology is a vast expanding and ever-changing subject and it's the key to understanding diseases worldwide. The allied health sciences are an endeavor to present this vast subject understandably to the learners. The aim of Teaching/learning Pathology at AHS is to provide knowledge/insight into etiology, pathogenesis, and pathophysiology & diseases.

Course Objectives:

- Describe the normal structure of a cell functions & its probable disease version. (cell in health disease)
- Cellular responses to injury & Adaptations, reversible irreversible injuries
- Inflammation & repair sequence of events happening during this.
- Infections, hemodynamic, Immunopathology, neoplasia, nutritional genetic disorder in disease conditions
- Systemic pathology ... Starting from the Heart, blood vessels, hematopathology.
- System-wise diseases discussion respiratory, GIT, hepatobiliary, urinary, MGT, FGT, Breast, Bones & joints, endocrines, Diabetes, skin, CNS & eye.
- Experiencing the practice of Clinical Pathology Starting with anticoagulants, HB estimation, blood, cell counts, hematocrit, PBS, ESR, RC, BM, examination, CSF, Semen analysis, urine & other body fluids.
- make the student understand the overall subject matter.

THEORY

Total: 60 Hrs

UNIT-I

12 Hrs

General Pathology -General pathology provides an overview of the basic pathologic mechanisms underlying diseases including cellular adaptations, inflammation, tissue repair, Chronic inflammation, hemodynamic disorders, immunological disorders, neoplasia, genetics and effects of radiation.

UNIT-II

12 Hrs

Systemic Pathology 1 -Deals with various organ systems like vascular, Cardiac, LN, Respiratory system, head and neck, GIT, liver & hepatobiliary system.

UNIT-III

12 Hrs

Systemic Pathology 2- pancreas, Urinary, Male genital system, female genital system, breast, bones, joints, soft tissue tumors, endocrines, Diabetes, Skin, CNS, peripheral nerves & Skeletal system.

UNIT-IV

12 Hrs

Haemato pathology -Disorders of RBCs, WBCs, Platelets, anaemias, leukaemias, disorders of hemostasis, coagulation disorders, plasma cell disorders& blood

UNIT-V

12 Hrs

Clinical pathology – deals with anticoagulants, Hb estimation blood cell counts, hematocrit, ESR, Reticulocyte count, BM examination, semen analysis, CSF and other body fluids analysis, urine examination

Course outcome:

At the end of the course, the student can able to expand/ learn

1. Define the **basic concepts and scope of pathology** and explain its role in the study of diseases.
2. Describe the **hematological changes and consequences** associated with various disease processes.
3. Explain the **pathogenesis, pathophysiology, and clinical manifestations** of common diseases.
4. Identify the possible **complications and outcomes** of major pathological conditions.
5. Apply knowledge of pathology in understanding **disease mechanisms and their relevance to clinical practice** in Allied Health Sciences.

PRACTICALS

Total: 30 Hrs

(Only theoretical lectures as there is no provision of technicians, or logistics provided for practicals for AHS students).

Hb estimation, RBC count, WBC count, platelet count, PBS, ESR, PCV, fluids, Urine examination.

Assessment of the student will be:

- Assignments
- Midterm examinations
- Workbook

References

- A well-illustrated textbook is available for AHS students – Text of pathology for AHS students – DR. Ramdas Nayak
- Robbins & Cotran text book of pathology
- Harsh Mohan text book of pathology
- Anderson's text book of pathology
- Bancroft text book of histological techniques

Course Description:

This course will cover general pharmacology with special emphasis on common drugs used, drug nomenclature, their routes of drug administration, dosage formulations, dose and frequency of administration. This course also covers side effects, toxicity, management of their toxicity and drug interactions.

Course Objectives:

Students undergoing this course are expected to:

- Describe the general principles of drug action, handling of drugs by the body and drugs acting on ANS & autacoid system.
- Explain the mechanism of action, therapeutic uses and adverse effects of drugs used in common CNS disorders.
- Explain the mechanism of action, therapeutic uses and adverse effects of drugs used in common cardiovascular diseases and haematological disorders.
- Explain the mechanism of action, therapeutic uses and adverse effects drugs used in common endocrine, respiratory and gastrointestinal disorders.
- Enlist drugs used in common infections, cancers and immunological disorders and explain their mechanism of action.

THEORY**Total: 60 Hrs****UNIT-I****12 Hrs**

General Pharmacology: Introduction, Definitions, Sources of Drugs, Drug nomenclature – Routes of administration & Pharmacokinetics – Pharmacodynamics – Factors modifying drug action – Adverse Drug Effects & Pharmacovigilance.

Drugs Acting on Autonomic Nervous System: Cholinergic Drugs –Anticholinergic Drugs – Adrenergic Drugs – Antiadrenergic Drugs

Autacoids and Related Drugs: Histamine and Antihistaminics –Prostaglandins, Leukotrienes (Eicosanoids) and Platelet Activating Factor – Nonsteroidal Anti-inflammatory Drugs (Antipyretic-Analgesics).

UNIT-II**9 Hrs**

Drugs Acting on Central Nervous System: General Anaesthetics –Local anaesthetics– Sedative & Hypnotics – Antiepileptic Drugs – Antiparkinsonian Drugs – Antipsychotic and mood stabilizers – Antidepressant and Antianxiety Drugs – Opioid Analgesics and Antagonists – Skeletal muscle relaxants.

UNIT-III

11 Hrs

Cardiovascular Drugs: Drugs Affecting Renin-Angiotensin System & CCBs –Diuretics – Cardiac Glycosides and Drugs for Heart Failure – Antianginal Drugs –Antihypertensive Drugs – Antiarrhythmic Drugs – Hypolipidemic Drugs

Drugs Affecting Blood and Blood Formation: Haematinics and Erythropoietin – Coagulants & Anticoagulants – Antiplatelet drugs & Fibrinolytics – IV fluids, Plasma expanders & Drugs for shock.

UNIT-IV

10 Hrs

Hormones and Related Drugs: Introduction, Thyroid Hormone and Thyroid Inhibitors – Insulin, Oral Hypoglycaemic Drugs and Glucagon – Corticosteroids– Sex hormones & Hormonal Contraceptives –Drugs Affecting Calcium Balance – Tocolytics & Ecbolics.

Respiratory System Drugs: Drugs for Cough – Drugs for Bronchial Asthma

Gastrointestinal Drugs: Drugs for Peptic Ulcer and Gastroesophageal Reflux Disease – Antiemetic & Prokinetic drugs – Drugs for Constipation and Diarrhoea

UNIT-V

18 Hrs

Antimicrobial Drugs: Beta-Lactam Antibiotics- Penicillins – Cephalosporins, Monobactams & Carbapenems – Sulfonamides, Cotrimoxazole and Quinolones – Tetracyclines and Macrolides –Aminoglycosides and Misc. Antibacterial Antibiotics – Antitubercular Drugs & Antileprotic Drugs –Antifungal Drugs – Antiviral Drugs (Non- retroviral) – Antiviral Drugs (Anti - retroviral) – Antimalarial Drugs – Antiamoebic and Other Antiprotozoal Drugs – Anthelmintic Drugs

Chemotherapy of Neoplastic Diseases: Anticancer Drugs

Miscellaneous Drugs: Immunosuppressant Drugs – Drugs Acting on Skin and Mucous Membranes – Antiseptics and Disinfectants – Ocular Pharmacology

Course Outcomes:

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

- Apply the pharmacokinetic and pharmacodynamics principles that describe drug actions.
- Explain the rationale for selection of suitable drugs used in various CNS disorders.
- Explain the rationale for selection of suitable drugs used in various cardiovascular and haematological disorders.
- Explain the rationale for selection of suitable drugs used in various endocrine, respiratory and gastrointestinal disorders.
- Explain the rationale for selection of suitable drugs used in common infections, cancers and immunological disorders.

PRACTICALS

Total: 30 Hrs

Course Objective:

The course will cover general pharmacology with special emphasis on route of administration, type of formulations, dose and frequency of administration, importance of manufacturing and expiry dates, storage instructions of each drug, calculation of drug doses and general principles in the management of poisoning.

The assessment of the students will be done with the help of following exercises.

- Spotters
- Dosage calculations
- Dosage formulations

Textbooks:

1. Textbook of Pharmacology for Dental & Allied Health Sciences – Padmaja Uday Kumar- 5th edition- 2023.
2. Fundamentals of Pharmacology for Allied Health Science- Dr Pradnya Deolekar- 3rd edition- 2019.
3. Textbook of Pharmacology for Allied Sciences- Kamalakannan - 3rd edition- 2019.

Reference Books:

1. Essentials of Medical Pharmacology - K.D. Tripathi- 8th edition Reprint-2023.
2. Basic & Clinical Pharmacology. Katzung BG (Ed), Publisher: Prentice Hall International Ltd., London- 15th Edition-2021.

FIRST YEAR – 2ND SEMESTER

PROGRAM CORE

Fundamentals of Respiratory Therapy

RTTT1501

L T P C

3 0 0 3

Course Description: The Fundamentals of Respiratory Therapy course provides a comprehensive introduction to the principles and practices of respiratory care. Designed for students pursuing a career in respiratory therapy, this course covers the essential knowledge and skills required to assess, treat, and manage patients with respiratory disorders.

Course Outcome:

At the end of the course, students should be able.

1. Understand the history and development of Respiratory care.
2. To know how to assess the basic clinical findings
3. Understand the normal and abnormal values of clinical assessment and laboratory data.
4. Understand the basic principles of Respiratory care.
5. Understand the ethical protocols as a medical-professionals.

UNIT -1

9hrs

Introduction to Respiratory Therapy:

- ✓ History and development of Respiratory care profession.
- ✓ Respiratory care education.
- ✓ Professional organisations and events.
- ✓ Future of Respiratory care.
- ✓ Medical terminology related to Respiratory care

UNIT - 2

9hrs

Clinical assessment of patient's:

- ✓ Patient interview and taking medical history.
- ✓ Common cardiopulmonary symptoms – Dyspnea, Cough, Hemoptysis, Chest pain, Fever, Pedal edema.
- ✓ Physical examination and vital sign's assessment.
- ✓ Examination of head and neck.

- ✓ Examination of thorax – Inspection, Palpation, Percussion, Auscultation.
- ✓ Breath sounds – Normal and Adventitious sounds.
- ✓ Cardiac examination auscultation of – Auscultation of normal and abnormal heart sounds.
- ✓ Abdominal examination.
- ✓ Examination of Extremities – Clubbing, Cyanosis, Pedal edema, Capillary refill etc.,

UNIT - 3

9hrs

Interpreting clinical and Laboratory data:

- ✓ Complete blood count – reference value, abnormal value and causes for abnormalities.
- ✓ Basic chemistry panel.
- ✓ Enzyme tests – Liver function tests, Pancreatic and Muscle enzyme tests, Cardiac enzyme and Protein tests.
- ✓ Microbiology – Sputum gram stain, Sputum culture, Acid-fast testing.

UNIT -4

9hrs

Physical principles of Respiratory care:

- ✓ States of matter
- ✓ Change of state – Thermodynamics, Archimedes principle, Avogadro's law, Graham's law, Dalton's law, Henry's law.
- ✓ Gas behaviour under changing conditions – Gas laws – Poiseuille's law, law of connectivity, Bernoulli effect.
- ✓ Clinical applications of gas law.

UNIT -5

9hrs

Ethical protocol as Respiratory Therapy:

- ✓ Ethical protocol for communication with patient's.
- ✓ Methods for enhancing quality of Respiratory care.
- ✓ Safety considerations.
- ✓ Record keeping.
- ✓ Patient charting

Total Hrs: 45hrs

Course Outcomes:

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

1. Acquire a thorough knowledge about respiratory therapy and medical terminology related to respiratory therapy.
2. Identify and assess clinical presentation of respiratory diseases patients.
3. Rephrase and assess the clinical and laboratory data
4. Recall the physical principles of respiratory care.
5. Acquire a knowledge about ethical aspects..

TEXT BOOKS:

- Egan's Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.

REFERENCE BOOK:

- Murray and Nadel's Textbook of Respiratory medicine, 2 Volume set - 7th edition.
- Shoemaker, Ayres, Greenvik, Holbrook, Textbook of Critical Care 4th edition.
- Equipment theory for Respiratory care – Gary C White – 5th edition.

University Core – II
Semester – II

TAUT1102

ENVIRONMENTAL STUDIES

L T P C
3 0 0 3

Course Description:

This course provides degree-seeking students with an array of opportunities to learn, practice and motivate communities on environmental importance. It further helps to understand the resources, optimize the recourses in future days, and address the gaps in the eco system.

Course Objectives:

Students undergoing this course are expected to:

1. Understand eco system and scope of multidisciplinary
2. Creating the awareness about environmental problems among people.
3. Imparting basic knowledge about the environment and its allied problems.
4. Developing an attitude of concern for the environment.
5. Understand the developments in global goals

Unit-I

8 Hrs

Multidisciplinary nature of environmental studies; Definition, scope and importance; Need for public awareness; **Natural Resources:** Renewable and non-renewable resources; Forest resources: Water resources: Mineral resources; Food resources: Energy resources: Land resources; Equitable use of resources for sustainable lifestyles; Natural resources and associated problems.

Unit-II

8 Hrs

Ecosystems: Concept of an ecosystem.; Introduction, types, characteristic features, structure and function of the following ecosystem: - Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries); Environment Protection Act, 1986; Public awareness.; Environment and human health.

Unit-III

8 Hrs

Biodiversity and its conservation: Introduction – Definition- genetic, species and ecosystem diversity.; Biogeographical classification of India; India as a mega-diversity nation; Hot-spots of biodiversity.; Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.; Endangered and endemic species of India; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit- IV**8 Hrs**

Environmental Pollution Definition; Cause, effects and control measures of Air pollution; Water pollution; Soil pollution; Marine pollution; Noise pollution; Thermal pollution and nuclear hazards - Solid waste Management: Causes, effects and control measures of urban and industrial wastes. - Role of an individual in prevention of pollution - Disaster management: floods, earthquake, cyclone and landslides.

Unit-V**8 Hrs**

Social Issues and the Environment: From Unsustainable to Sustainable development; Water conservation- rain water harvesting- watershed management; Resettlement and rehabilitation of people; its problems and concerns.; Environmental ethics: Issues and possible solutions.; Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust - Wasteland reclamation.; Consumerism and waste products.; Population and environment.

Field work**5 Hrs**

Field visits to nearby; awareness campaign; special lectures by experts; quiz, debate competitions, short film Contest, rally etc

Course Outcomes:

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

1. Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
2. Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving.
3. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental activists
5. Be part in Development goals and educating the communities.

Text Books:

1. Textbook of Environmental Studies (English, Paperback, Asthana D. K.) S.Chand & co , New Delhi
2. Textbook of Environmental Studies for Undergraduate Courses, Erach B Haruchu, UGC, KINDLE Edition, Amazon.

Reference Book:

1. Encyclopedia of Environment and Society- set of 5 volumes, Sage Publications

University Elective – II

Semester – II

S. No	Name of the Course
Indian Languages	
1	Telugu
2	Tamil
3	Hindi
4	Professional English
Foreign Languages	
5	French
6	German
7	Spanish
8	Japanese

Course Description:

बच्चों में हिन्दी पढ़ने, लिखने की क्षमता बढ़ाना। आपस में अपनी भावनाओं को प्रकट करने की क्षमता बढ़ाना मुख्य उद्देश्य है।

Course Objectives:

1. संज्ञा, संज्ञा के प्रकार, सर्वनाम, सर्वनाम के प्रकार, क्रिया, क्रिया के प्रकार, कर्शेषण, कर्शेषण के प्रकार
2. लिंग, वचन, काल, वाच्य, अर्थ, विलोम शब्द, शब्दों का वाक्य में प्रयोग
3. हिंदी सीखने की आश्चर्यकता बताते हुए छोटी बहन के नाम पर पत्र।, विहार यात्रा का वर्णन करते हुए अपने ममत्र के नाम पत्र।, शूल्क भरने के लिए पैसे भेजने अपने कृपता के नाम पत्र।
4. कफन - प्रेमचंद, वापसी - उषा प्रियम्वदा यशपाल - परदा
5. यरकान्त त्रिपाठी निराला - जूही की कली, महादेवी वर्मा - मैं नीर भरी दुख की बदली, सुममत्रानंदन पंत - भारत माता

UNIT-I**9 Hrs**

1. संज्ञा, संज्ञा के प्रकार
2. सर्वनाम, सर्वनाम के प्रकार
3. क्रिया, क्रिया के प्रकार
4. विशेषण, विशेषण के प्रकार

UNIT-II**9 Hrs**

1. लिंग, वचन, काल, कारक
2. अर्थ, विलोम शब्द
3. शब्दों का वाक्य में प्रयोग

UNIT-III (पत्र लेखन)**9 Hrs**

1. हिंदी सीखने की आवश्यकता बताते हुए छोटी बहन के नाम पर पत्र।
2. विहार यात्रा का वर्णन करते हुए अपने मित्र के नाम पत्र।
3. शूल्क भरने के लिए पैसे भेजने अपने पिता के नाम पत्र।

UNIT-IV (कहानी और कहानीकार)**9 Hrs**

1. कफन - प्रेमचंद
2. वापसी - उषा प्रियम्वदा
3. यशपाल - परदा

UNIT-V (कवि और कविता)

9 Hrs

1. सूर्यकांत त्रिपाठी निराला - जूही की काली
2. महादेवी वर्मा - मैं नीर भरी दुख की बदली
3. सुमित्रानंदन पंत - भारत माता

Course Outcomes:

1. बच्चों में पढ़ने का क्षमता बढ़ाना
2. लिखने की क्षमता बढ़ाना
3. बोलने की क्षमता बढ़ाना
4. भाषा के प्रकृत रूलच उत्पन्न कराना
5. दैनंददन जीर्न में भाषा का प्रयोग करना

Text Books:

1. हिन्दी व्याकरण
2. विश्वनाथ तिवारी की हिंदी कविता
3. प्रेमचंद की कहानियां

Reference Books:

विविधि प्रकार के कहानी और व्याकरण के किताबें संदर्भ ग्रंथ सूची

1. हिन्दी व्याकरण -कांता रानी मंजूषा,हरदेव बिहारी
2. विश्वनाद प्रसाद तिवारी - हिंदी कविता
3. विश्वनाद प्रसाद तिवारी- आधुनिक हिंदी कविता
4. पुष्पपाल सिंह - समकालीन हिंदी कविता

Course Description:

This course aims to enhance the English language proficiency of engineering students in professional contexts. Through a combination of theoretical knowledge and practical exercises, students will develop their skills in technical writing, oral communication, presentation, and critical thinking. The course will focus on various aspects of professional communication, including report writing, academic writing, technical presentations, and effective communication in interdisciplinary teams. Additionally, students will engage with real-world engineering scenarios to apply language skills in practical contexts.

Course Objectives:

Students undergoing this course are expected to:

1. Develop proficiency in technical writing for engineering reports, research proposals, and documentation.
2. Enhance oral communication skills for effective presentations, meetings, and discussions and thereby improve their employability skills.
3. Improve critical thinking and analytical skills through the evaluation of technical information and arguments.
4. Foster teamwork, collaboration skills in interdisciplinary engineering projects.
5. Develop awareness of cultural and linguistic diversity in professional settings.

UNIT-I**9 Hrs**

Pronunciation: Course techniques include recordings, partner work, group activities and one-on-one instructor feedback. Your speech will become clearer, more fluent and easier to understand. You'll improve your enunciation of individual sounds, intonation, stress patterns, pace and pausing.

UNIT-II**9 Hrs**

Speaking Professionally: You'll build greater confidence through individual work, group interaction and feedback from your peers and instructor. To express yourself more clearly and concisely, whether you are speaking in impromptu situations or making well-planned Presentations. Focus on language that familiarizes you with the use of English in everyday situations and contexts.

UNIT-III**9 Hrs**

Refine Your Grammar: Express yourself more accurately and eloquently by improving your English Grammar. You'll get the strong foundation you need to write and speak more clearly, precisely and persuasively. You'll explore the relationship between words in sentences, and analyse structure and meaning, clarify common problem points and improve punctuation.

You'll have the opportunity to practice with your peers and get helpful feedback. You'll also learn what resources are best for ongoing grammar help. You'll apply them to produce effective, concise written work with newfound confidence. You'll express yourself more clearly and persuasively by using varied, well-structured sentences and placing content more strategically. You'll also develop editing skills to rid your work of errors.

UNIT-IV

9 Hrs

Writing Essentials – Professional Writing Improve your written English for personal, professional and academic purposes. You'll refine your sentence structure, punctuation and verb tenses, and eliminate the most common errors that confuse readers. You'll enhance your writing style. Develop editing skills that help you revise your work. Lectures, discussions, e-learning tools and assignments will help you develop the communication skills you'll need in today's business environment.

UNIT-V

9 Hrs

You'll be equipped to create power packed Power Point Presentations. Be in better stead to introducing yourself. To know the nuances that goes into the presenting of information, and articulating information. Know how to make an impressive introduction. To imbibe Life Skills that is necessary to lead a fruitful and a fulfilling life.

Course Outcomes:

At the end of the course the student will be able:

1. To understand the importance of Professional English in work place and learn the correct pronunciation and delivery of speech.
2. To read technical proposals properly and make them to write good technical reports.
3. To achieve better comprehending skills, vocabulary and professional speaking skills.
4. To learn and identify the Common Errors in Writing and Speaking.
5. Acquire digital competence, employment and workplace communication skills.

Text Books:

1. Technical Communication: Process and Product by Sharon J. Gerson and Steven M. Gerson
2. Engineering Communication: From Principles to Practice by David Ingre, C. O'Brien
3. Technical Writing Basics: A Guide to Style and Form by Brian R. Holloway

Reference Books:

1. The Encyclopaedia Britannica" - A comprehensive general encyclopaedia covering a wide range of topics.
2. The Oxford English Dictionary (OED)" - A comprehensive dictionary of the English language.

TAUT1202A

FRENCH

**LTPC
3 0 0 3**

Course Description:

This course introduces students to French by intensively studying important aspects of pronunciation, vocabulary, grammar and sentence formation through practice sets and audio visual lessons. It introduces the workings and sounds of the language and provides the necessary tools to enable students to make sentences from scratch.

Course Objectives:

1. To train the students to know about France, French culture and basics
2. To teach them to learn basic grammar and vocabulary.
3. To train them to learn tenses in French
4. To train them to talk about their daily routine
5. To train them to converse in French in day-to-day scenarios

UNIT-I

9 Hrs

Introduction to France and its regions - French alphabets and numbers, countries and nationality

Grammaire – Verbs – s'appeler, être, avoir, definite and indefinite articles
Communication – Greetings, Self Introduction

UNIT-II

9 Hrs

Basic vocabulary, colours, months and days

Grammaire - Verbes - Conjugation : Present tense (ER, IR, RE ending verbs) – Adjective possessive
Communication – Talk about family and friends, date, time etc.

UNIT-III

9 Hrs

Hobbies, interests and daily routine

Grammaire – Irregular verbs – Reflexive verbs - Future proche
Communication – Talking about hobbies and interests

UNIT-IV

9 Hrs

Vocabulary of places and transport

Grammaire – Pertinent verbs, adjective demonstrative, past tense, propositions
Communication – Narrating an incident or story

UNIT-V

9 Hrs

Vocabulary of food, services, money

Grammaire – Negation, Verbs – acheter, manger, payer, articles partitifs. Communication – Accept and refuse an invitation, situation in a restaurant

Course Outcomes:

After the course, the students will be able to:

1. Acquire familiarity in the French alphabet & basic vocabulary
2. Listen and identify individual sounds of French
3. Use basic sounds and words while speaking
4. Read and understand simple advertisements, brochures and invitations
5. Understand and use basic grammar and appropriate vocabulary in completing language tasks

Text Books:

1. Grammaire Progressive du Français, CLÉ International, 2010.
2. Saison 1, Marie-Noëlle Cocton et al, Didier, 2014.
3. Cosmopolite A1 - Nathalie Hirschsprung, Tony Tricot

Reference Books:

1. Préparation à l'examen du DELF A1 – Hachette
2. Réussir le DELF A1 – Bruno Girardeau

TAUT1202B**GERMAN****L T P C
3 0 0 3****Course Description:**

German Language Training

Course Objectives:

1. Importance of German Language in Global prospective
2. To develop Reading skills for Basic Level
3. German writing skills, particularly emails & short messages
4. To develop basic German Speaking skills in order to meet the General activities
5. Listening practise to understand German Accent of the Native German Speakers

UNIT-I**9 Hrs**

GUTEN TAG!: Saying hello and goodbye, introducing oneself and others, talking about oneself and others, numbers 1-20, spelling words and names, talking about countries and languages, the alphabet, first verbs in present tense, how to ask questions, useful terms and expressions

UNIT-II**9 Hrs**

FRUENDE, KOLLEGEN UND ICH: Talking about hobbies, days of the week, numbers from 20 on up, months and seasons in the year, talking about work and job, definite article, personal pronouns, the verbs to have (haben) and to be (sein), plurals of nouns.

UNIT-III**9 Hrs**

IN DER STADT: Getting around a town and asking for the way, giving directions, indefinite articles, negation with kein, imperative forms.

UNIT- IV**9 Hrs**

GUTEN APPETIT!: Talking about food, planning a trip to the grocery store, food and meals and talking about it, verbs that require the accusative

UNIT- V**9 Hrs**

TAG FÜR TAG: Telling and understanding time, talking about one's family, possessive articles (mein, dein) and modal auxiliaries (müssen, können, wollen).

Course Outcomes:

1. Basic Reading skills
2. Basic Writing skills with basic Grammar
3. Speaking skills and to do advance German Course
4. Understanding basic German for Daily Communication
5. Awareness of European Union and opportunities in Europe

Text Books:

1. A1-German Level- Netzwerk A1 Book- Prescribed by International Institute- Goethe Institute Delhi.

III Semester

Respiratory Therapy Oriented Anatomy and Physiology

RTTT2501

L T P C
3 1 0 4

Course Description: This course provides an in-depth exploration of the structure and function of the respiratory system in humans. Through a combination of lectures, laboratory sessions, and interactive activities, students will gain a comprehensive understanding of the anatomical features and physiological mechanisms involved in respiration.

Course objective:

At the end of the course, students should be able.

1. Understand the basic structures and function of respiratory system.
2. Understand the mechanism of respiratory system.
3. Understand the physiology of external respiration.
4. Understand the regulation of breathing.
5. Understand the basic structure and function of cardiovascular system.

UNIT -1

Functional anatomy of Respiratory system:

12 hrs

- ✓ Upper Respiratory Tract – Paranasal sinuses, Nasal cavity, Nose, Pharynx and Eustachian tube.
- ✓ Lower Respiratory Tract – Larynx, Trachea, Bronchopulmonary segments, Lungs.
- ✓ The mucous blanket, Mucus cilia function, Lung parenchyma alveolar epithelium, the alveolar macrophage, surfactant.
- ✓ Respiratory muscles.

UNIT -2

Pulmonary mechanics:

12hrs

- ✓ Physics of ventilation
- ✓ The principle of compliance
- ✓ The principle of airway resistance.
- ✓ Lung volume and capacities.
- ✓ Work of breathing.

UNIT -3

Physiology of External Respiration:

12hrs

- ✓ The systemic Capillary blood,
- ✓ The V/Q relationship,
- ✓ Shunting and Deadspace ventilation,
- ✓ The concepts of deadspace Ventilation,
- ✓ Physiological shunt, Anatomical Shunt, Capillary shunt, Shunt effect.

UNIT -4

Regulation of breathing:

12hrs

- ✓ Medullary Respiratory Center,
- ✓ Pontine Respiratory center.
- ✓ Reflex control of breathing,
- ✓ Chemical control of breathing.
- ✓ Ventilatory response to exercise.
- ✓ Abnormal breathing pattern.

UNIT -5

Anatomy and physiology of CVS:

- ✓ Anatomy of heart and Great Vessels,
- ✓ Gross anatomy of cardiac Chamber,
- ✓ Conduction system,
- ✓ circulatory system,
- ✓ Events of cardiac cycle,

Total Hrs: 60hrs

Course Outcomes:

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

1. Acquire a thorough knowledge in structural and functional unit of Respiratory system.
2. Able to Rephrase the mechanism of pulmonary system.
3. Evaluate the physiology of external respiration.
4. Recall and asses the regulation of breathing.
5. Acquire a knowledge in cardiac structural and functional system.

TEXT BOOKS:

- B.D Chaurasia's Human anatomy 9th edition.
- Richard S. Snell, Clinical anatomy for medical students, 9th edition.
- Best and Taylor's Physiological basics of medical practice – 13rd edition.

REFERENCE BOOK:

- Williams PL., Warwick R, Dyson M, Bannister LH (eds) Grey's Anatomy 38th edition.
- Arthur C Gyton, John E Hall, Textbook of Medical Physiology, 13th edition.
- Respiratory Physiology- The Essentials 7/E by West J.B.

Pharmacology Specific to Respiratory Therapy

RTTT2502

L T P C
3 1 0 4

Course Description: This course provides an in-depth exploration of the specific drugs used in pulmonary pathological condition. Through a combination of lectures, laboratory sessions, and interactive activities, students will gain a comprehensive understanding of the pharmacology of Respiratory system.

Course objective:

At the end of the course the students should be able.

1. To know about the bronchodilators.
2. To know about the phosphodiesterase inhibitors and corticosteroid's.
3. To understand the pharmacology of various muco-active drugs.
4. To understand the detailed pharmacology of 1st line and 2nd line ATT drugs.
5. To understand the fundamental pharmacology of cardiovascular drugs.

UNIT -1

12hrs

Adrenergic Bronchodilator

- ✓ Isoprenaline,
- ✓ Salbutamol (Albuterol)
- ✓ Salmeterol
- ✓ Formoterol (Indications, Mechanism of action, Contraindication, Pharmacokinetics, Pharmacodynamics, Half-life, Adverse effects)

Anticholinergic Bronchodilator

- ✓ Atropine Sulfate (Atropine),
- ✓ Ipratropium bromide,
- ✓ Tiotropium bromide (Indications, Mechanism of action, Contraindication, Pharmacokinetics, Pharmacodynamics, Half-life, Adverse effects).

UNIT -2

12hrs

Phosphodiesterase Inhibitors:

- ✓ Aminophylline,
- ✓ Theophylline,
- ✓ Doxofylline. (Indications, Mechanism of action, Contraindication, Pharmacokinetics, Pharmacodynamics, Half-life, Adverse effects).

Corticosteroids:

- ✓ Hydrocortisone,
- ✓ Prednisone, (Indications, Mechanism of action, Contraindication, Pharmacokinetics, Pharmacodynamics, Half-life, Adverse effects).

Inhaled corticosteroid:

- ✓ Beclomethasone,
- ✓ Budesonide,
- ✓ Fluticasone. (Indications, Mechanism of action, Contraindication, Pharmacokinetics, Pharmacodynamics, Half-life, Adverse effects).

UNIT -3

12hrs

Mucoactive drugs:

- ✓ Expectorants: Guaifenesin.
- ✓ Muco regulators: Carbocystein
- ✓ Mucolytics: a)N-Acetylcysteine, b)Erdosteine, c)Dornase alfa.
- ✓ Mucokinetics: Ambroxol.

UNIT-4

12hrs

Antitubercular drugs:

- ✓ 1st line Anti-tubercular drugs,
- ✓ 2nd line Anti-tubercular drugs.

Aerosolized antimicrobials

- ✓ Antibiotics: a) Gentamycin, b) Amoxicillin.
- ✓ Antiviral agents: Ribavirin.
- ✓ Antiprotozoal agents: Pentamidine.

UNIT -5

12hrs

Cardiovascular drugs:

- ✓ Inotropic drugs: a) Dopamine, b) Dobutamine, c) Isoprenaline.
- ✓ Antianginal drugs: Nitroglycerine
- ✓ Antiarrhythmic drugs: a) Xylocaine (Lignocaine), b) Amiodarone, c) Digoxin.
- ✓ Diuretics: a) Furosemide, b) Potassium sparing diuretics, c) Thiazides.

Total hrs: 60hrs

COURSE OUTCOMES:

At the end of this course, students should be able to

1. Acquire a thorough knowledge about bronchodilator drugs.
2. Acquire a thorough knowledge about corticosteroid's.
3. Explain the significance of muco-active drugs in respiratory pathologies.
4. Able to describe the ATT drugs and aerosolized antimicrobial drugs.
5. Acquire a knowledge of drugs in cardiovascular system.

TEXT BOOKS:

- RAU'S ,Respiratory Care Pharmacology- Douglas S. Gardenhire – 10th edition.

REFERENCE BOOKS:

- Essentials of Medical Pharmacology – K.D Tripathy – 8th edition.
- Pharmacology for dental and Allied health sciences – Udayakumar Padmaja – 7th edition.

Pathophysiology Specific to Respiratory Therapy – I

RTTT2503

L T P C
3 1 0 4

Course Description: This course offers a comprehensive overview of respiratory diseases, covering their etiology, pathophysiology, clinical manifestations, diagnosis, treatment, and prevention strategies. Through a combination of lectures, case studies, discussions, and hands-on activities, students will gain a deep understanding of various respiratory conditions, their impact on individual and public health, and current approaches to management.

Course Objective:

After completion of the course, a student will be able to:

1. Identify different Diseases of Upper Respiratory tract.
2. Identify different Diseases of Lower Respiratory tract.
3. Identify different Diseases of airways and pleural space.
4. Understand the Pathology of Restrictive lung diseases
5. identify the various aspects of occupational and environmental lung diseases.

UNIT-1

12hrs

Upper Respiratory tract infections:

- ✓ Acute Rhinitis,
- ✓ Acute Sinusitis,
- ✓ Acute Pharyngitis,
- ✓ Laryngotracheitis,
- ✓ Epiglottitis,
- ✓ Acute otitis media. (Definition, Etiology, Epidemiology, classification, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

UNIT -2

12hrs

Lower Respiratory tract infections:

- ✓ Bronchiectasis,
- ✓ Hospital acquired pneumonia,
- ✓ Ventilator associated pneumonia,
- ✓ Tuberculosis,

- ✓ Lung abscess,
- ✓ Aspergillus lung disease. (Definition, Etiology, Epidemiology, classification, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

UNIT-3

12hrs

Obstructive lung disease:

- ✓ Asthma,
- ✓ COPD,
- ✓ Emphysema,
- ✓ Chronic bronchitis,
- ✓ Cystic fibrosis. (Definition, Etiology, Epidemiology, classification, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

Pleural diseases:

- ✓ Pleural effusion,
- ✓ Pneumothorax,
- ✓ Empyema. (Definition, Etiology, Epidemiology, classification, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

UNIT -4

12hrs

Restrictive lung disease:

- ✓ Atelectasis,
- ✓ Neuromuscular diseases (Myasthenia gravis, Guillain barre syndrome),
- ✓ Obesity Hypoventilation syndrome,
- ✓ Disease of mediastinum and chest wall (Definition, Etiology, Epidemiology, classification, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

UNIT-5

12hrs

Occupational and Environmental lung diseases:

- ✓ Hypersensitivity pneumonitis: Farmers lung, Bagassosis, Humidifier/Air conditioner lung, Bird breeder's lung, Cheese worker's lung, Malt worker's lung, Wheat weevil, Paprika splitter's lung, Mollusk shell hypersensitivity, Chemical workers lung.
- ✓ Pneumoconiosis: Asbestosis, Silicosis, Berylliosis, Coal workers lung, Byssinosis. (Definition, Etiological, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

Total Hrs: 60 hrs

Course Outcomes:

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

1. Acquire a thorough knowledge about upper respiratory tract infection.
2. Acquire a thorough knowledge about lower respiratory tract infection.
3. Recognize and assess obstructive lung diseases.
4. Recognize and assess restrictive lung diseases.
5. Acquire a knowledge about occupational lung diseases.

TEXT BOOKS:

- Egan's Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.

REFERENCE BOOKS:

- Textbook of Pathology – Harsh Mohan – 8th edition.
- Murray and Nadel's Textbook of Respiratory medicine, 2 Volume set - 7th edition.
- Shoemaker, Ayres, Greenvik, Holbrook, Textbook of Critical Care 4th edition

Clinical skills I

RTTL2501

L T P C
0 0 12 6

Course Description: The Respiratory System Practical course is designed to provide students with hands-on experience and a comprehensive understanding of the respiratory system's anatomy, physiology, and clinical aspects. This course complements theoretical knowledge with practical skills essential for careers in healthcare, biomedical sciences, and related fields.

Course objective:

After completion of the course, a student will be able to:

1. Identify different infection control practices in pulmonary centers.
2. Understand the components of Aseptic techniques. Understand the different aseptic techniques present in the pulmonary centre.
3. Know how to take vitals
4. Know how to take Respiratory assessment.
5. Understand how to approach pulmonary function testing.

Unit 1: Infection control

30 hrs

- ✓ Describe the protocol for the hospital & Respiratory care department
- ✓ the personal protective equipment (PPE), handle PPE as per instructions and explain its importance.
- ✓ Explain in detail about nosocomial infections.
- ✓ Demonstrate the steps of waste management.

Unit 2: Aseptic techniques

30 hrs

- ✓ Importance of sterilization.
- ✓ Demonstrate the steps of handwashing techniques.
- ✓ Explain the different Aseptic techniques.
- ✓ Explain the disinfection techniques of laboratory, wards, ICU and OT.

Unit 3: Vital signs

30 hrs

Vital signs measurement

- ✓ Explain the indications to check Respiratory rate and demonstrate the methods and techniques to assess RR.

- ✓ Explain the difference methods to assess Blood Pressure and Heart rate. Demonstrate the manual BP measurement.
- ✓ Demonstrate the techniques to assess Pulse rate at various site.
- ✓ Explain the actions to be taken during the abnormal reading.
- ✓ Identify the clinical features and correlates with the abnormality and explain the action plan.

Unit 4: Respiratory assessment

30 hrs

Oxygen saturation monitoring

- ✓ Explain the non-invasive methods of assessing tissue oxygen saturation.
- ✓ Explain the Arterial blood sampling. Demonstrate the Allen's test and techniques in step by step process to take ABG sampling.
- ✓ Explain the measurement to be taken during hypoxic and hypoxemic conditions.
- ✓ Explain normal RR. Describe the increased work of breathing in specific pulmonary pathological conditions.
- ✓ Explain the auscultation points to assess normal and abnormal breath sounds.

Unit 5: Fundamentals of Pulmonary function testing

30 hrs

- ✓ Explain the various methods of PFT.
- ✓ Explain PEFV. Demonstrate the steps to assess PEFV and mention the normal rate for male and female.
- ✓ Explain pre and post-bronchodilator effects in PEFV.
- ✓ Proper documentation of all tested values based on ethical rules.

Total Hrs: 150 hrs

Course Outcomes:

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

- Identify and describe the infection control methods.
- Able to demonstrate the sterilization techniques over respiratory equipments
- Able to assess vital signs.
- Recognize and assess respiratory assessments.
- Demonstrate the basics of Pulmonary function test.

Text Book:

- Murray and Nadel's Textbook of Respiratory medicine, 2 Volume set-7th edition.

Reference Books:

- Shoemaker, Ayres, Greenvik, Holbrook, Textbook of Critical Care 4th edition.
- Manual of Pulmonary Function testing – Gregg Ruppel – 10th edition.
- Equipment theory for Respiratory care – Gary C White – 5th edit

University Core – III
Semester – II

TAUT2101

HEALTH AND WELLNESS

L T P C
3 0 0 3

Course Description:

The course is designed to help students to learn more about human health. This course helps to understand how current health knowledge helps to make future human beings even stronger and healthier.

Course Objectives:

1. To help understand the importance of a healthy lifestyle
2. To familiarize students about physical and mental health
3. To create awareness of various life style related diseases
4. To understand the multiple dimensions of health and wellness, including physical, mental, emotional, social, and environmental aspects
5. To Equip students with the knowledge and skills to develop, implement, and maintain healthy lifestyle practices

UNIT-I

9 Hrs

Define and differentiate health and wellness, Importance of health and wellness, Basic concepts of genetics, including genes, DNA, chromosomes, and inheritance patterns. Genetic factors affecting macronutrient (carbohydrates, proteins, and fats) digestion. Genetic variations associated with micronutrient (vitamins and minerals) digestion; malnutrition, under nutrition and over nutrition

UNIT-II

9 Hrs

Brief overview of Body systems – Skeletal system, Muscular system, Circulatory System, Lymphatic system, Cardiovascular system, Respiratory system, Nervous system (Central nervous system, Peripheral nervous system, Somatic and Autonomic nervous systems), Digestive system, Urinary system, Endocrine system, Reproductive system, Integumentary system

UNIT-III

9 Hrs

Sedentary lifestyle and its risk of disease, Lifestyle Disease and its Management, Factors affecting mental health - Stress, anxiety, and depression, Identification of suicidal tendencies, Substance abuse (Drugs, Cigarette, Alcohol), de-addiction, counselling and rehabilitation. Four

Vital signs- Pulse rate, Respiratory rate, Blood pressure, Body temperature, other measurements-Body mass index, Waist-Hip Ratio, Basal Metabolic Rate

UNIT-IV

9 Hrs

Risk factors and Pathology of the following Diseases and their Management –

- Diabetes
- Hypertension
- Coronary Heart Disease
- Obesity
- Osteoporosis
- Osteoarthritis
- Rheumatoid-arthritis
- Cancers (Blood, Breast, Brain, Lung, Liver and Kidney)
- Polycystic ovarian syndrome (PCOS)
- Pain (including Low Back pain)

UNIT-V

9 Hrs

Introduction to Functional Foods; Nutrients and Bioactive Compounds in Functional Foods; Functional Foods for Cardiovascular Health, Weight Management, Immune Function, Cognitive Health, Chronic Disease Prevention; Yoga and its importance in Health and Wellness

Course Outcomes:

Upon successful completion of the course the student would be able to –

1. Understand the relationship between fitness and wellness
2. Gain knowledge regarding various aspects and its practical implication for Wellbeing.
3. Learn about behavior change theories and strategies for promoting healthy habits such as exercise, stress management, and nutrition
4. Study techniques for setting realistic health goals, creating wellness plans, and overcoming barriers to maintaining a healthy lifestyle.
5. Learn about the principles of a balanced diet, regular physical activity, mental health management, social relationships, and environmental factors that influence health

Text Books:

1. Physical Activity and Health by Claude Bouchard, Steven N. Blair, William L. Haskell.
2. Mental Health Workbook by Emily Attached & Marzia Fernandez, 2021.
3. Mental Health Workbook for Women: Exercises to Transform Negative Thoughts and Improve WellBeing by Nashay Lorick, 2022.

Reference Books:

1. Lifestyle Diseases: Lifestyle Disease Management, by C. Nyambichu & Jeff Lumiri, 2018.
2. Physical Activity and Mental Health by Angela Clow & Sarah Edmunds, 2013.

University Elective - III**Semester - III**

S. No	Name of the Course	Host Department
1	Community Engagement	School of Social Sciences
2	Clinical Nutrition	School of Health Sciences – BMS & GMB
3	Emotional Intelligence & Mental Health	School of Health Sciences – Psychology
4	Human Rights	School of Social Sciences
5	Industry 4.0	School of Technology – CSE
6	Medical Terminology	School of Health Sciences – BMS & GMB
7	Social Network Analysis	School of Health Sciences – PH
8	Antibiotic Resistance & Biomedical Waste Management	School of Health Sciences – AHS
9	Behavior Change Communication	School of Health Sciences – PH
10	Disability Management	School of Health Sciences – Psychology
11	Disaster Management	School of Social Sciences
12	Human Values & Professional Ethics	School of Social Sciences
13	Infection Prevention & Control	School of Health Sciences – AHS
14	NSS & Youth Development	School of Social Sciences

TAUT2201

COMMUNITY ENGAGEMENT

L T P C
3 0 0 3

Course Description:

This course provides degree-seeking students with an array of opportunities to engage in an immersive community service-learning experience. It further helps to understand the resources, optimize the recourses in future days, and address the gaps in the communities.

Course Objectives:

Students undergoing this course are expected to:

1. Understand community issues, needs, problems, strengths and recourses
2. Demonstrate the ability to work with a diverse population
3. Formulate more precise personal and professional life goals
4. Demonstrate the ability to communicate effectively and collaborate with institutions and public
5. Demonstrate the ability to take initiative, follow directions, lead, and solve problems

UNIT-I Social Structure

5 Hrs

Concept of Society; Community; Association and Institution; Individual and Society; Social Groups- Meaning, Characteristics and Classification; Social Process; Social Change; Structure and Characteristics of urban, rural and tribal communities.

UNIT-II Social Organisation and Disorganisation

5 Hrs

Social Organisation- meaning, elements and types; Voluntary Associations; Social System- definition, types and roles; Social Control- meaning, aims and process of social control; Social norms, morals and values; Social Disorganisation- definition, causes, control and planning.

UNIT-III Social Problems and Welfare State

8 Hrs

Social Problems- Poverty, Housing, food supply, illiteracy, Prostitution, dowry, child labour, child abuse, delinquency, crime, substance abuse, HIV/ AIDS, Covid-19; Venerable Group- elderly, handicapped, minority and another marginal group; Fundamental rights of individual, women and children, NITI Aayog, Ministry of Social Justice & Empowerment, Ministry of Rural Development, Ministry of Tribal Affairs, Ministry of Health & Family Welfare, and Role of Local Bodies for transformation; Corporate Social Responsibility; Social Work.

Proposed Field activities: Field visit- Interaction with Local Self Government, Visit of Gram Panchayat & Staff, Socio-Economic Survey (5 hours/ one day).

UNIT-IV Communication Strategies and Community Engagement

18 Hrs

Social Behaviour Change Communication (SBCC); Focused Group Discussion; SWOT analysis; Participatory Learning Action.

Proposed Field activities: Meeting, Mobilizing, Transect Walk, Identification of Natural Leaders, Timeline, Mapping, Case Study, Documentation; Outreach- Special Camp Viz., Health Education, Medical Camp, Environment Protection, Sustainability, Technology & Innovation, Nutrition, Swachh Bharat (15 Hours/ 4 days).

UNIT-V Sustainable Development Goals 2023

9 Hrs

Millennium Development Goals; Sustainable Development Goals (SDGs) 2030- 17 Goals; SDG Pyramid; Localizing SDGs; Gram Panchayat Development Plan (GPDP).

Proposed Field activities: Mapping the activities with SDG 2030 (6 Hours/ 1 day).

Course Outcomes:

By the end of the course, students should be able to:

1. Understand and apply the concept related to community and social structure.
2. Develop the ability to involve and work with the social system.
3. Understand various social problems emerging in society and solve them.
4. Apply SBCC tools and SWOT analysis.
5. Appreciate Sustainable Development Goals and contribute beyond SDG 2030.

Text Books:

1. Krishna Kant Singh & Ram Shankar Singh, (2011), Social Work and Community Development.
2. Makara Rumley, (2020), Modern-Day Strategies for Community Engagement: How to Effectively Build Bridges Between People and the Bottom Line.

Reference Books:

1. Hall, B. L., Tandon, R. & Tremblay, C. (2015). Strengthening Community University Research Partnerships: Global Perspectives.
2. http://unescochaircbrsr.org/unesco/pdf/UNESCO%20Book%20Web_with%20BookCovers_Aug202015_FINAL.pdf
3. GUNi (Ed.). (2014). Knowledge, Engagement and Higher Education: Contributing to Social Change (Higher Education in the World 5). Hampshire (UK)/New York (USA): Palgrave Macmillan.
4. UNESCO Chair in Community Based Research & Social Responsibility in Higher Education (2015). Institutionalizing Community University Research Partnerships: A User's Manual. http://unescochair-cbrsr.org/unesco/pdf/CURP_Guidelines.pdf
5. Vallaey, F. (2014). University Social Responsibility: A Mature and Responsible Definition. In GUNi (Ed.), Knowledge, Engagement and Higher Education: Contributing to Social Change (Higher Education in the World 5) (pp. 88-96)

Course Description:

Upon completion of the course, students will be prepared to apply their knowledge of clinical nutrition to promote health and manage diseases effectively, contributing to multidisciplinary healthcare teams. This course is essential for healthcare professionals, nutritionists, dietitians, and anyone interested in understanding the role of nutrition in clinical care and wellness promotion.

Course Objectives:

To enable the students to:

1. Develop proficiency in conducting comprehensive nutritional assessments using various methods such as dietary recall, biochemical tests, and anthropometric measurements.
2. Understand the impact of diet on the prevention, management, and progression of chronic diseases commonly encountered in clinical practice, including diabetes, cardiovascular diseases, and obesity.
3. Acquire skills in designing individualized nutrition plans tailored to specific patient needs and health conditions across different life stages (e.g., pediatric, geriatric, maternal).
4. Evaluate ethical issues related to nutritional counseling, respecting cultural dietary practices, and providing evidence-based dietary recommendations within clinical settings.
5. Critically appraise current research and controversies in clinical nutrition, integrating evidence-based guidelines into decision-making processes to optimize patient outcomes.

UNIT-I**9 Hrs**

Introduction to nutrition - Food as source of nutrients, functions of food, definition of nutrition, nutrients & energy, adequate, optimum & good nutrition, malnutrition, Effect of cooking & heat processing on the nutritive value of foods, role of nutrition in prior pregnancy, during pregnancy, during lactation, in adolescence, Fitness, Athletics & Sports

UNIT-II**9 Hrs**

Food guide - Basic five food groups How to use food guide (according to R.D.A.) Interrelationship between nutrition & health: - Visible symptoms of good health, Use of food in body - Digestion, Absorption, transport & utilization, Role of fibres in human nutrition. malnutrition, Protein energy malnutrition.

UNIT-III**9 Hrs**

Biomolecules as a nutrient: Carbohydrates: Functions, classification, food sources, storage in body. Fats & oils: composition, saturated and unsaturated fatty acids, classification, food

sources, function of fats. Proteins - composition, sources, essential & non-essential amino acids, functions, Protein deficiency.

UNIT-IV

9 Hrs

Water minerals and Vitamins: Water - as a nutrient, function, sources, requirement, water balance & effect of deficiency. Minerals - macro & micronutrients. - Functions, sources. Bioavailability and deficiency of Calcium, Iron, Iodine, Sodium & Potassium, Vitamins (water & fat soluble) - definition, classification & functions.

UNIT-V

9 Hrs

Role of nutrients in disease management: Importance of nutrition in kidney and liver diseases with respect to their nutritional value. Case study- diabetes, cancer, Osteoporosis, Heart related diseases, role of Antioxidants as a nutrient in disease control.

Course Outcomes:

Upon completion of the course, the student shall be able to

1. Demonstrate proficiency in conducting thorough nutritional assessments using a variety of methods, interpreting results, and applying findings to develop dietary recommendations.
2. Apply knowledge of macro and micronutrients, dietary supplements, and hydration to design effective nutrition plans for individuals with diverse health needs and conditions.
3. Implement dietary interventions that contribute to the prevention, management, and improvement of chronic diseases, integrating nutritional strategies into comprehensive healthcare plans.
4. Evaluate and address ethical considerations in nutritional counseling, respecting cultural diversity and individual preferences while adhering to professional standards and evidence-based practices.
5. Critically analyze current research literature in clinical nutrition, utilizing evidence-based guidelines to make informed decisions and enhance patient outcomes in clinical settings.

Text Books:

1. Kathleen ML and Escott S. Krause's Food, Nutrition and Diet Therapy, 9th edn, W.B. Saunders Company Pennsylvania, 2000.
2. Davidson S, Passmore R, Breck JFT. Human Nutrition and Dietetics, The English Language Book Society and Churchill Livingstone, 1975.

Reference Books:

1. Thomas B. Manual of Dietetic Practice. Blackwell Scientific Publications, Oxford, London, 1988.
2. Robinson CH. Normal and Therapeutic Nutrition. Oxford Publishing Co, Bombay, 1972.

Course Description:

This course will explore the relationship between emotional intelligence and mental health. Students will learn about the importance of emotional intelligence in promoting positive mental health, and will develop skills in recognizing and regulating emotions, managing stress, and building resilience. The course will cover topics such as emotional intelligence theories, emotional regulation strategies, mindfulness, self-compassion, and the impact of emotions on mental health.

Course Objectives:

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

1. Understand the role of emotional intelligence in mental health
2. Develop skills in recognizing and regulating emotions
3. Understand the impact of stress on mental health and develop strategies for managing stress
4. Understand the importance of self-compassion in promoting positive mental health
5. Develop critical thinking and analytical skills in relation to emotional intelligence and mental health

UNIT-I**9 Hrs**

Introduction to Emotional Intelligence and Mental Health; Definition and history of emotional intelligence, the role of emotional intelligence in mental health, Professional organizations and ethical codes related to emotional intelligence

UNIT-II**9 Hrs**

Theoretical Perspectives on Emotional Intelligence; Ability model of emotional intelligence, Trait model of emotional intelligence, Mixed model of emotional intelligence, Mindfulness and Mental Health, Mindfulness and Mental Health.

UNIT-III**9 Hrs**

Stress and Mental Health, Resilience and Mental Health; The impact of stress on mental health, Stress management techniques (e.g., relaxation techniques, time management, exercise) Definition and benefits of resilience, Factors that contribute to resilience, Building resilience in oneself and others.

UNIT-IV**9 Hrs**

Self-Compassion and Mental Health, Emotions and Relationships; Definition and benefits of self-compassion, Practice of self-compassion, Relationship between self-compassion and mental health, Emotions and Relationship.

UNIT-V**9 Hrs**

Emotional Intelligence in the Workplace, Ethics and Emotional Intelligence; Emotional intelligence and job performance, the role of emotional intelligence in leadership, Emotional intelligence training in the workplace, Ethical issues related to emotional intelligence, Professional codes and standards related to emotional intelligence , Final Project Presentations Students will present their final projects, which may include research papers, case studies, or other projects related to emotional intelligence and mental health.

Course Outcomes:

1. Able to provide an overview of emotional intelligence and mental health
2. Will understand the importance of emotional intelligence
3. The impact of stress on mental health, Stress management techniques
4. Relationship between emotional intelligence and mental health
5. Understand the importance of Emotional Intelligence in the workplace.

Text Books:

1. Neff, K. (2011). Self-compassion: Stop Beating Yourself Up and Leave Insecurity Behind. HarperCollins.
2. Goleman, D. (2007). Emotional Intelligence (10th ed.). Bantam Books.

Reference Books:

1. Covey, Stephen R., author. (2020). The 7 habits of highly effective people: powerful lessons in personal change. New York :Simon & Schuster.
2. Tolle, E. (2016). The power of now: A guide to spiritual enlightenment. Yellow Kite.

TAUT2204

HUMAN RIGHTS

L T P C
3 0 0 3

Course Description:

This course offers a comprehensive introduction to the field of human rights, exploring the historical development, philosophical foundations, and contemporary issues surrounding the protection and promotion of human rights globally. Students will engage with key concepts, major international human rights instruments, and the roles of various actors in the human rights landscape.

Course Objectives:

This course is intended to prepare the students to

1. Know Human Rights, its need importance, and kind of rights
2. Understand the Human Rights of vulnerable groups
3. Identify and analyze key international human rights documents and treaties.
4. Know about the institutions enforcing the Human Rights
5. Understand the violations of Human Rights and the safeguards available to citizens.

UNIT-I Concept of Human Rights – Indian and International Perspectives **5 Hrs**

1. Evolution of Human Rights
2. Definitions under Indian and International documents

UNIT-II Broad classification of Human Rights and Relevant Constitutional Provisions. **11 Hrs**

1. Right to Life, Liberty and Dignity
2. Right to Equality
3. Right against Exploitation
4. Cultural and Educational Rights
5. Economic Rights
6. Political Rights
7. Social Rights

UNIT-III Human Rights of Women and Children **11 Hrs**

1. Social Practice and Constitutional Safeguards
2. Female Foeticide and Infanticide
3. Physical assault and harassment
4. Domestic violence
5. Conditions of Working Women

UNIT-IV Institutions for Implementation

9 Hrs

1. Human Rights Commission
2. Judiciary

UNIT-V Violations and Redressal

9 Hrs

1. Violation by State
2. Violation by Individuals
3. nuclear weapons, bio war and terrorism
4. Safeguards.

Course Outcomes:

After the successful completion of this course the students will be able to

1. Know about Human Rights, its need importance and kind of rights
2. Understand the Human Rights of vulnerable groups
3. Know about the institutions enforcing the Human Rights
4. Understand the violations of Human Rights and the safeguards available to citizens.
5. Develop critical thinking and analytical skills by examining case studies and current events.

Text Books:

1. Human Rights in India: Historical, Social and Political Perspectives (Law in India)
Hardcover – Illustrated by Chiranjivi J. Nirmal (Author)
2. History of Human Rights, Narrated by Andrea Giordani

Reference Books:

1. The Universal Declaration of Human Rights- UNO publication
2. Making Sense of Human Rights- by James Nickel.
3. The Idea of Natural Rights- by Brian Tierney.
4. The Law of Peoples- by John Rawls.
5. On Human Rights. - by James Griffin.
6. Human Rights: Contemporary Issues by V.K. Ahuja
7. Human Rights, M Girija, S Chand Edu tech Pvt. Ltd.

TAUT2205

INDUSTRY 4.0

L T P C
3 0 0 3

Course Description:

The Industry 4.0 aims to the “smart” and connected production systems that are designed to sense, predict, and interact with the physical world, so as to make decisions that support production in real-time. In manufacturing, it can increase productivity, energy efficiency, and sustainability.

Course Objectives:

The objective of this course is to make students:

1. To impart basic idea in Industry 4.0.
2. To provide students with good depth of knowledge of designing Industrial 4.0 Systems for various application.
3. To learn the artificial intelligence and machine learning techniques/ tools in health care.
4. To understand the bigdata technology and its applications in health care.
5. To learn the design and analysis of Industry 4.0 systems for healthcare applications.

UNIT-I

9 Hrs

Introduction: Introduction, Historical Context, General framework, Application areas, Dissemination of Industry 4.0 and the disciplines that contribute to its development, Artificial intelligence, The Internet of Things and Industrial Internet of Things, Additive manufacturing, Robotization and automation, Current situation of Industry 4.0.

UNIT-II

9 Hrs

Cyber Physical System: Introduction to Cyber Physical Systems (CPS), Architecture of CPS- Components, Data science and technology for CPS, Emerging applications in CPS in different fields. Case study: Application of CPS in health care domain.

UNIT-III

9 Hrs

Artificial Intelligence & Machine Learning: Artificial Intelligence: Artificial Intelligence (AI) – What & Why? History of AI- Foundations of AI, the AI Environment, Application Domains and Tools.

Machine Learning- Introduction–Definition–Types of Machine Learning–Supervised, Unsupervised, Reinforcement Learning–Algorithms for Machine Learning–Problems solved by Machine Learning–Applications areas of Machine Learning in Health care.

UNIT-IV

9 Hrs

Big Data & Cloud Computing: What is Big Data, Evolution of Big Data, sources of Big Data? Characteristics of Big Data Vs – Big Data Myths- Data Discovery-Traditional Approach, Big Data Technology: Big Data Technology Process– Applications of Bigdata in Healthcare. Cloud Computing: Need– Definition – Types of Cloud-Types of Services– SaaS, PaaS, IaaS

UNIT-V

9 Hrs

Impact of Industry 4.0 on Healthcare Industry: An introduction Discover how Industry 4.0 is impacting and transforming the Healthcare Industry including self-diagnosis systems for patients, real-time diagnosis, 3D printed organs and Internet-of-Medical Things (IOMT).

Course Outcomes:

Upon completion of the course, student will be able to:

1. Understand the basic concepts of Industry 4.0 and the other related fields
2. Analyze, design and develop systems to solve the Engineering problems by integrating thermal, design and manufacturing Domains.
3. Understand the various artificial intelligence and machine learning tools in health care domain.
4. Apply bigdata technology in health care applications.
5. Apply the learned Engineering knowledge for the Development of society and self.

Text Books:

1. Jean-Claude André, —Industry 4.0, Wiley- ISTE, July 2019, ISBN: 781786304827, 2019.
2. Diego Galar Pascual, Pasquale Daponte, Uday Kumar, —Handbook of Industry 4.0 and SMART Systems, Taylor and Francis,2020

Reference Books:

1. P. Kaliraj, T. Devi, BigDataApplicationsinIndustry4.0, 2022, ISBN9781032008110, CRC Press, Taylor & Francis Group
2. P. Kaliraj, Devi Thirupathi, “Artificial Intelligence Theory, Models and Applications”, Auerbach Publications, CRC Press, Taylor and Francis group, 2021.
3. Ethem Alpaydin, “Introduction to Machine Learning”, Third Edition, MIT Press, 2014.
4. P. Kaliraj, T. Devi, Industry 4.0 and Education: Transformative Technology and Applications, 2022, CRC Press, Taylor & Francis Group.

TAUT2206

MEDICAL TERMINOLOGY

L T P C

3 0 0 3

Course Description:

The purpose of this course is to develop a student's understanding and use of hospital and medical terminology. There is a focus on understanding the terms commonly used to identify the cause and effects of disease conditions.

Course Objectives:

1. To understand the associate medical terms with specific body systems.
2. To identify and interpret diagnostic and symptomatic terms related to the diseases specific to each body system.
3. To describe designated diagnostic testing procedures (laboratory, x-ray, surgical, pharmacy, etc.).
4. To Enable students to understand, use, and correctly pronounce a wide range of medical terms.
5. To Prepare students to effectively communicate with healthcare professionals and patients using accurate medical terminology.

UNIT-I

9 Hrs

Basics of medical terminology, Specialties in a Hospital, The Human body in health and disease

UNIT-II

9 Hrs

The Skeletal System, The Muscular System, The lymphatic and immune systems

UNIT-III

9 Hrs

The Respiratory System, The Circulatory System, The Digestive System, The Urinary System

UNIT-IV

9 Hrs

The Nervous system, Special senses - Eyes and Ears, Skin - The Integumentary system

UNIT-V

9 Hrs

The Endocrine system, The Reproductive System, Diagnostic procedures, Nuclear Medicine and Pharmacology

Course Outcomes:

Upon successful completion of the course student would be –

1. Able to Identify and interpret complex medical terms by breaking them into their component word parts in order to decipher their meaning.
2. Able to understand common diseases and disorders of the body systems
3. Able to identify diagnostic tools and techniques for the common diseases and disorders of the human body
4. Able to interpret medical records, lab reports, and other documentation to ensure clear and precise communication within healthcare teams and with patients
5. Able to learn the roots, prefixes, and suffixes that form medical terms, as well as the terminology related to various body systems, diseases, procedures, and treatments. Students will be able to deconstruct complex terms into their component parts to understand their meanings.

Text Books:

1. Medical Terminology for Health Professions, 7th Edition by Ann Ehrlich; Carol L Schroeder, ISBN 13: 9781111543297, Published by Delmar Cengage Learning (2013)
2. Workbook for Ehrlich/Schroeder's Medical Terminology for Health Professions, 7th by Carol Schroeder, Ann Ehrlich Published by Delmar Cengage Learning; 7th edition, 2012, ISBN-13 : 978-1111543280

Reference Books:

1. Quick and Easy Medical Terminology - With Access by Peggy C. Leonard, ISBN13: 978-0323595995, 9th Edition
2. Medical Terminology Systems: A Body Systems Approach - With Access by Barbara A. Gylys, ISBN13: 978-0803658677, 8th Edition
3. Understanding Medical Terminology by Agnes C. Frenay, ISBN13: 978-0697140586, 9th Edition

Course Description:

A thorough introduction to Social Network Analysis (SNA), an interdisciplinary topic that studies the connections and interactions between people, groups, and things in various social contexts, is provided in this course. Students will receive a broad understanding of the core ideas, approaches and uses of SNA in a variety of disciplines. The course will cover data gathering methods, network visualization, fundamental network metrics, sophisticated network ideas and practical SNA implementations. Students will learn the skills necessary to evaluate social networks and gain useful insights from intricate network data through hands-on exercises.

Course Objectives:

1. To introduce students to the foundational concepts and historical background of Social Network Analysis (SNA).
2. To familiarize students with the basic building blocks of social networks, including nodes and edges and different types of social networks (e.g., online, offline, professional, friendship).
3. To provide students with an understanding of key network measures such as degree centrality, betweenness centrality, clustering coefficients and network density.
4. To demonstrate real-world applications of SNA, such as social network mining, influence and opinion dynamics, social network marketing and cybersecurity.
5. To equip students with practical skills for analyzing and interpreting social network data.

UNIT-I**9 Hrs**

Overview of Social Network Analysis: Definition, history and key concepts. Nodes and Edges: Understanding the basic building blocks of social networks. Types of Social Networks: Exploring different types of social networks (e.g., online, offline, professional, friendship). Importance and Applications of SNA: How SNA is used in various fields (e.g., Engineering, Sociology, Psychology, Marketing and Business).

UNIT-II**9 Hrs**

Data Collection Methods: Techniques for gathering social network data (e.g., surveys, interviews, online platforms). Data Representation: Different formats for representing network data (e.g., adjacency matrix, edge list). Network Visualization: Introduction to visualization tools for and interpreting network structures.

UNIT-III**9 Hrs**

Degree Centrality: Identifying influential nodes based on their connections. Betweenness Centrality: Understanding nodes that act as bridges in the network. Clustering Coefficients: Analyzing the degree of interconnectedness within local neighbourhoods. Network Density: Assessing the overall connectivity of a social network.

UNIT-IV**9 Hrs**

Small World Phenomenon: Exploring the "six degrees of separation" concept. Homophily and Social Influence: Understanding how social networks shape individuals' behaviour and beliefs. Network Resilience and Robustness: Examining the impact of node removal on the network's stability. Network Motifs: Identifying recurring patterns in complex social networks.

UNIT-V**9 Hrs**

Social Network Mining: Using SNA to extract meaningful patterns and insights from large-scale networks. Influence and Opinion Dynamics: Analyzing how information spreads through social networks. Social Network Marketing: Leveraging SNA for targeted marketing campaigns and product promotion. Online Social Networks and Cyber security: Understanding network-based threats and vulnerabilities.

Course Outcomes:

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

1. Comprehend the foundational concepts, methodologies and tools of Social Network Analysis.
2. Extract meaningful insights from social network data, identifying influential nodes and understanding network dynamics.
3. Apply SNA concepts to real-world challenges in areas such as marketing, cyber security and social dynamics.
4. Utilize SNA techniques to inform decision-making processes.
5. Conduct and interpret SNA in various domains effectively.

Text Books:

1. Social Network Analysis: Methods and Applications" by S. K. Garg, 2019, Wiley India.
2. Introduction to Social Network Analysis: Concepts, Methods and Applications" by R. K. Singh, 2020, Springer India.

Reference Books:

1. Social Network Analysis: Methods and Applications" by Stanley Wasserman, Katherine Faust (1994, Cambridge University Press)
2. Analyzing Social Networks" by Stephen P. Borgatti, Martin G. Everett, Jeffrey C. Johnson (2013, SAGE Publications)
3. Networks, Crowds and Markets: Reasoning About a Highly Connected World" by David Easley, Jon Kleinberg (2010, Cambridge University Press).

ANTIBIOTIC RESISTANCE & BIOMEDICAL WASTE MANAGEMENT

TAUT2208

L T P C
3 0 0 3

Course Description:

This course covers antibiotics and drug resistance, including mechanisms and trends, and explores biomedical waste management, focusing on segregation, treatment, and disposal. Emphasis is placed on antimicrobial stewardship and modern technologies for handling biomedical waste and ensuring environmental safety.

Course Objectives:

Students undergoing this course are expected to:

1. Understand the history, mechanisms, and types of antibiotic resistance.
2. Analyze trends in drug resistance and actions to combat it.
3. Evaluate the consequences of antibiotic resistance and implement antimicrobial stewardship.
4. Learn principles and practices of biomedical waste management and environmental safety.
5. Utilize modern technologies and personal protective equipment for effective biomedical waste handling.

UNIT-I

9 Hrs

Antibiotics: Antibiotic Resistance, History of antibiotics, How resistance happens and spreads, Types of resistance- intrinsic, acquired, passive.

UNIT-II

9 Hrs

Drug resistance - I: Trends in drug resistance, Actions to fight resistance, Bacterial persistence, Antibiotic sensitivity

UNIT-III

9 Hrs

Drug resistance - II: Consequences of antibiotic resistance, Antimicrobial Stewardship – Barriers and opportunities, tools and models in hospitals.

UNIT-IV

9 Hrs

Biomedical waste management and environmental safety - I: Definition of Biomedical, Waste, Waste minimization, BMW – Segregation, collection, transportation, treatment and disposal (including colour coding).

UNIT-V

9 Hr

Biomedical waste management and environmental safety - II: Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste, BMW Management & methods of disinfection, Modern Technology for Handling BMW, Use of Personal protective equipment (PPE), Monitoring & controlling cross-infection (Protective devices).

Course Outcomes:

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

1. Explain antibiotic resistance, its history, and mechanisms.
2. Analyse trends and strategies in drug resistance management.
3. Assess the consequences of antibiotic resistance and implement antimicrobial stewardship.
4. Understand principles and practices of biomedical waste management.
5. Apply modern technologies and PPE for effective biomedical waste handling and infection control.

Text Books:

1. "Antibiotics: Actions, Origins, Resistance" by Christopher Walsh
2. "Antimicrobial Stewardship: Principles and Practice" by Matthew Laundry, Lynda A. Sisson, and Matthew Dryden.

Reference Books:

1. "Biomedical Waste Management in Hospitals: A Manual for Health Professionals" by Sushrut S. N. H.

TAUT2209

BEHAVIOR CHANGE COMMUNICATION

L T P C

3 0 0 3

Course Description:

This course introduces students to the fundamentals of behavioral theory, research and interventions in health education and promotion. The course will expose students to a wide range of theories, basic statistics and the use of open-source software in the analysis and evaluation of health aspects at the community level in a holistic manner. Furthermore, students will understand the concept of intersectoral and multidisciplinary coordination in order to improve data visualization in health education and promotion through the use of appropriate statistical tools.

Course Objectives:

1. To understand the behavioral, social and cultural factors associated with health and illness.
2. To explore factors that influence and barriers to practicing health behavior and changing poor health habits across age groups.
3. To understand the structure of society, the role of society and various types of communication and identify the role of society, community, health education and communication in health.
4. To describe the methods, models, tools and processes used in understanding health behavior change, health education and promotion.
5. To apply relevant social and behavioral theories to diagnose and understand individual, social network, organizational, community and policymaker behaviors associated with the planning, implementation, evaluation and maintenance of community-based primary health care programs.

UNIT-I

5 Hrs

Introduction to Social and Health Behavioral Health, Importance of social and behavioral factors in health, Historical perspectives on population and diseases.

UNIT-II

8 Hrs

Health behavior: role of behavior factors in disease and disorders, Health behavior, health habits, Illness behavior, Practicing and changing health behavior, Barrier to modify poor health behavior, intervening with children, adolescents, adults and at risk, social determinants of Health, Changing health habits.

UNIT-III

12 Hrs

Basic concepts of society, community, and family, Society: features and types, Concept of culture: characteristics, elements, variability, social institutions: marriage and family. Working with communities, Community: Definition, concept of community participation, Benefits of community participation, Health communication, Communication: Definition, scope and requirements, Types of communication, Components of communication, Communication stages, Common communication approach, Methods of communication, Characteristics of effective communication, Barriers of effective communication.

UNIT-IV**10 Hrs**

Health Behavior Models, Social Epidemiology, Health belief model, Theory of planned behavior, Transtheoretical Model and change process, Social network theory, Diffusion of innovation, Social reaction to diseases, Comparative health cultures, Health disparities.

UNIT-V**10 Hrs**

Introduction Social network analysis, Basic of social network analysis, Introduction to open-source software and classification in health approaches, Introduction to Node XL software, Install, data visualize, data analysis and application among community level for policy-maker behaviors associated with the planning, implementation, evaluation, and maintenance of community-based health programs.

Course Outcomes:

End of the course completion student would be

1. Understand behavioral, social and cultural factors associated with health and illness.
2. Develop strategies to address barriers to practicing healthy behaviors and changing poor health habits across age groups.
3. Analyze the structure of society and various types of communication and identify the role of society, community, health education and communication in health.
4. Apply appropriate methods, models, tools and processes for understanding health behavior change, health education and promotion.
5. Utilize SNA tools, strategies and social and behavioral theories to diagnose and understand individual, social network, organizational, community and policymaker behaviors in community-based primary health care programs.

Text Books:

1. Essentials of health behavior: Social and behavioral theory in public health by Mark Edberg (Jones and Bartlett publishers
2. Mahajan BK. Methods in Bio-statistics. Jaypee Brothers, Medical Publishers (p) Ltd., G16, EMCA House, 23/23B, Ansari Road, Daryaganj, Post Box: 7193, New Delhi 110 002, India, 1991. List Current Essential Reference

Reference Books:

1. Foster and Anderson: Medical Anthropology, Wiley, New York
2. Anderson & Taylor, Sociology: Understanding a Diverse Society.
3. Neubeck and Glasberg, Selected Material from Sociology: Diversity, Conflict, and Change.

TAUT2201A

DISABILITY MANAGEMENT

L T P C
3 0 0 3

Course Description:

Disability Management course is designed to provide students with an in-depth understanding of the strategies, practices, and policies essential for supporting individuals with disabilities in various settings. This course covers the principles and techniques of disability management, focusing on creating inclusive environments in the workplace, educational institutions, and the community.

Course Objectives:

1. Understand the social, medical, and legal aspects of disability.
2. Evaluate the impact of disability on individuals and society.
3. Analyze policies and regulations related to disability management.
4. Develop strategies for supporting individuals with disabilities in various contexts.
5. Promote inclusivity and diversity in the workplace and community.

UNIT-I Introduction to Disability Management

9 Hrs

Definition and classification of disabilities, Historical perspectives on disability, Disability as a social construct, Medical aspects of Disability, Common medical conditions leading to disability, Assessing functional limitations and impairments

UNIT- II Social and Psychological Aspects of Disability

9 Hrs

The impact of disability on quality of life, Stigma and discrimination, Coping and psychological adjustment to disability, Role of healthcare professionals in disability management, Psychological Interventions and Chronic Health Disorders; Therapies, Pharmacological Interventions, Individual Therapy, Relaxation, Stress Management and exercise, Social Support Interventions, Help on the Internet, Support Groups

UNIT- III Legal and Ethical Framework

9 Hrs

Disability rights and legislation, Equal opportunity and anti-discrimination laws, Ethical considerations in disability management, Emerging technologies and their impact on disability management, the future of disability policy and practice

UNIT- IV Workplace Disability Management

9 Hrs

Reasonable accommodation and the Americans with Disabilities Act (ADA), Return-to-work programs Workplace diversity and inclusion, Current Issues

UNIT- V Community and Public Health Approach

9 Hrs

Community resources and services for individuals with disabilities, Accessibility and universal design Disability awareness and advocacy, Analysis of real-life cases in disability management, Developing disability management plans, Accommodation strategies and their implementation, Current Issues and Future Trends

Course Outcomes:

By the end of the course, the students would be able to;

1. Understand various aspects and causes of disability.
2. Get insight on the efficacy of interventions and therapies to deal disability.
3. Assess the ethical and legal consideration of disability.
4. Acknowledge the importance of ADA act and its implementation in workplace.
5. Know and participate in various community based disability programs.

Text Books:

1. Preventing chronic disease: a vital investment. WHO global report. Geneva, World Health Organization, 2005 (http://www.who.int/chp/chronic_disease_report/en, accessed 15 May 2008).
2. Singh D. Transforming chronic care: evidence about improving care for people with long-term conditions. Birmingham, University of Birmingham, 2005.

Reference Books:

1. Chronic diseases [web site]. Geneva, World Health Organization, 2008 (http://www.who.int/topics/chronic_disease/en, accessed 15 May 2008).
2. National Center for Health Statistics definitions: health condition [web site]. Atlanta, United States Centers for Disease Control and Prevention, 2008.

Course Description:

The Disaster Management course is designed to provide students with a comprehensive understanding of the principles, strategies, and practices essential for effectively managing disasters. This course explores the various types of natural and human-made disasters, their causes, impacts, and the processes involved in mitigating, preparing for, responding to, and recovering from such events.

Course Objectives:

The main objectives of this course are to:

1. To impart knowledge and concepts of disaster, disaster management and disaster risk reduction.
2. To enhance the students understanding on Hazard Vulnerability and Risk Analysis
3. To develop positive attitude towards practical response to different stages of disaster
4. To management by adopting advance technology and sustainable development.
5. To ensure disaster response skills in assessment, analysis, intervention and evaluation in the Practice of reducing disaster risk.

UNIT- I**9 Hrs****Concepts of Disaster and Vulnerability**

- Hazards and disasters - Concepts, vulnerability and risks
 - Hazard and disaster type- Natural, Water-related, Pandemic and Human induced hazards and disasters
 - Causes and impacts of disasters- Impact on natural eco-system; physical, psychological and social impact
 - Disaster and financial resilience
 - GIS and Remote Sensing
- Disaster vulnerability profile of India - Specific to geographical regions and states (as per regional significance).

UNIT- II**9 Hrs****Disasters Intervention Practices**

- Disaster Management Cycle-Rescue, relief, rehabilitation, reconstruction, prevention, mitigation and preparedness
 - Disaster risk reduction (ORR) - community based ORR, Institutions concerned with safety, Disaster mitigation and construction techniques as per Indian Standard
 - Early warning systems
 - Trauma and Stress management
 - First-aid and emergency procedures
- Awareness generation strategies for the community on safe practices in disaster (as per regional significance)

UNIT- III

9 Hrs

Disaster Management

Components of disasters management - Preparedness of rescue & relief, mitigation, rehabilitation & reconstruction
Institutional framework of disaster management in India (NDMA-SDMA-DDMA, NDRF, Civic volunteers, NIDM),
Phases of disasters/risk management and post-disaster responses Compensation and insurance

UNIT- IV

9 Hrs

Applications of remote sensing & GIS in disaster management

- Capacity building for disaster/damage mitigation (structural and non-structural measures).
- Disaster risk reduction strategies and National Disaster Management Guidelines
- Disaster Management Act-2005
- Regional issues as per regional requirement/ university can take minimum two topics as per High Powered Committee.

UNIT- V

9 Hrs

Practical exposure requirements: Field work/ community visit and Vulnerability Mapping, Safe community planning and implementation, Mock Drill/ Regional issues as per region/university

Course Outcomes:

Upon completion of this course, the student will be able to:

1. Define and analysis factors contributing to disasters, threats to development, life and nature
2. Demonstrate, and practice disaster risk reduction activities towards sustainable development
3. Formulate, organize and assess disaster risk reduction
4. Plan activities according to the nature of disasters and factors of vulnerabilities
5. Able to mitigate disaster and educate communities

Mode of Evaluation: Continuous Assessment Test, Quizzes, Assignments, Multiple choice questions test, field work report, project report.

Text Books:

1. "Disaster Management" by Harsh K. Gupta
2. "Disaster Management: Future Challenges and Opportunities" by Jagbir Singh

Reference Books:

1. Singh, R. (2017), "Disaster Management Guidelines for Earthquakes, Landslides, Avalanches and Tsunami". Horizon Press Publications
2. Taimpo (2016), "Disaster Management and Preparedness" CRC Press Publications
3. Nidhi, G.D. (2014), "Disaster Management Preparedness". CBS Publications Pvt. Ltd.
4. Gupta, A. K., Nair, S.S., Shiraz, A. and Dey, S.(2013), "Flood Disaster Risk Management CBS Publications Pvt. Ltd.
5. Singh, R. (2016), "Disaster Management Guidelines for Natural Disasters" Oxford University Press Pvt. Ltd.

TAUT2201C

HUMAN VALUES & PROFESSIONAL ETHICS

L T P C

3 0 0 3

Course Description:

The Human Values and Professional Ethics course aims to explore the fundamental principles that underpin ethical behavior and moral reasoning. This course provides students with an understanding of core human values and ethical frameworks, fostering the development of personal integrity, social responsibility, and professional ethics. Through this course, students will engage with key philosophical theories, contemporary ethical issues, and the application of ethical principles in various contexts.

Course Objectives:

1. Understand the need, guidelines, content, and process for Value Education.
2. Understand the concept of harmony within oneself.
3. Understand the values in human relationships.
4. Understand the interconnectedness and mutual fulfillment among the four orders of nature.
5. Understand the implications of a holistic understanding of harmony on professional ethics.

UNIT-I

9 Hrs

Introduction – Need, guidelines, content and process for Value Education Value Education

- Understanding the need, basic guidelines, content and process for Value Education
- Self-exploration what is it? Its content and process; “Natural acceptance” and Experiential Validation as the mechanism for self-exploration.

UNIT-II

9 Hrs

Understanding harmony in the human being- Harmony in myself!

- Understanding human being as a coexistence of the sentient I and the material body
- Understanding the harmony of I with the body: Sanyam and Swasthya; correct appraisal of physical needs, meaning of prosperity in detail.

UNIT-III

9 Hrs

Understanding harmony in the Family and Society- Harmony in Human relationship

- Understanding values in human –
- Human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay- trupti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship
- Visualizing a universal harmonious order in society-Undivided Society (Akhand Samaj), Universal Order (Sarvabhaum Vyawastha) from family to world family.

UNIT-IV

9 Hrs

Understanding Harmony in Nature; Coexistence

- Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature.
- Holistic perception of harmony at all levels of existence.

UNIT-V

9 Hrs

Implications of the above Holistic understanding of harmony on professional ethics

- Definitiveness of Ethical Human Conduct
- Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
- Competence in professional ethics
- Ability to utilize the professional competence for augmenting universal human order

Course Outcomes:

After the completion of this course, the learners will be able to:

1. Students will be able to explain the need, guidelines, content, and process for Value Education.
2. Students will demonstrate an understanding of the harmony within oneself, identifying the sentient self and the material body.
3. They will be capable of visualizing and explaining the concept of a universal harmonious order from the family level to the global level.
4. They will recognize and explain the importance of recyclability and self-regulation in nature, and develop a holistic view of harmony at all levels of existence.
5. They will be able to define and advocate for ethical human conduct in their professional lives.

Text Books:

1. "Value Education and Professional Ethics" by R.S. Naagarazan
2. "Human Values and Professional Ethics" by Rishabh Anand

Reference Books:

1. Mind and Body: Holistic Approach"by Dr. V.K. Sharma
2. "Integrative Body-Mind Training" by Yi-Yuan Tang
3. Understanding Harmony in the Family and Society
4. "Human Values and Professional Ethics" by Jayashree Suresh
5. "Ethics in Engineering Practice and Research" by Caroline Whitbeck

TAUT2201D

INFECTION PREVENTION AND CONTROL

L T P C
3 0 0 3

Course Description:

This course covers infection control principles, antibiotic resistance, and antimicrobial stewardship. Students will learn about sterilization, disinfection, hand hygiene, PPE, and managing drug resistance in healthcare settings.

Course Objectives:

Students undergoing this course are expected to:

1. Understand evidence-based infection control practices.
2. Learn prevention and control of healthcare-associated infections.
3. Analyse the history and mechanisms of antibiotic resistance.
4. Examine trends and actions to combat drug resistance.
5. Implement antimicrobial stewardship in hospitals.

UNIT-I

9 Hrs

Evidence-based infection control principles and practices: Sterilization, Disinfection, Effective hand hygiene, Use of Personal Protective Equipment (PPE).

UNIT-II

9 Hrs

Infection control: Prevention & control of common healthcare-associated infections, Components of an effective infection control program, Guidelines (NABH and JCI) for Hospital Infection Control.

UNIT-III

9 Hrs

Antibiotics: Antibiotic Resistance, History of antibiotics, How resistance happens and spreads, Types of resistance- intrinsic, acquired, passive.

UNIT-IV

9 Hrs

Drug resistance: Trends in drug resistance, Actions to fight resistance, Bacterial persistence, Antibiotic sensitivity.

UNIT-V

9 Hrs

Consequences of antibiotic resistance, Antimicrobial Stewardship – Barriers and opportunities, tools and models in hospitals

Course Outcomes:

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

1. Apply effective infection control practices.
2. Prevent and manage healthcare-associated infections.
3. Explain the history and spread of antibiotic resistance.
4. Identify and combat drug resistance trends.
5. Implement antimicrobial stewardship strategies.

Text Books:

1. "Infection Prevention and Control: Theory and Practice for Healthcare Professionals" by Debbie Weston
2. "Antibiotics: Actions, Origins, Resistance" by Christopher Walsh

Reference Books:

1. "Antimicrobial Stewardship: Principles and Practice" by Matthew Laundry, Lynda A. Sisson, and Matthew Dryden

Course Description:

The National Service Scheme (NSS) aims to develop students' personalities through community service and national integration. It encourages students to work towards societal development, fostering a sense of responsibility and civic duty. The program bridges academic learning and real-life experiences, promoting overall personal growth and social awareness among youth.

Course Objectives:

1. To explain the nature, functions and importance of NSS.
2. To explain the role of NSS in the context of youth, community and voluntary service.
3. To develop the necessary communication and soft skills.
4. To appreciate the importance of health, hygiene and sanitation for a healthy nation.
5. To develop the concept and skills of managing environment issues and disaster management.

UNIT-I**9 Hrs**

Youth Development Program in India and Role of Youth Leaders National Youth Policy; Youth Development Program at National Level, State Level, Volunteer Level; Youth centric and youth led organizations Role and Importance of youth leadership, Leadership capability and its development.

UNIT-II**9Hrs**

Meaning type of leader, Qualities, Traits, Role, Importance of a Good Leader Social, psychological factors affecting the youth.
Life Skills-Self-awareness, Empathy, Effective Communication, Decision Making; Role of Music and Art in Youth Development.

UNIT-III**9 Hrs**

Basic Features of the Indian Constitution consumer protection act right to Information; Child Protection Act, Problems of Aging: Problems Protection of Interests.

UNIT-IV**9 Hrs**

Side effects of modern lifestyle and their countermeasures Diet, exercise, sleep in Indian lifestyle; Collection, Utilization and Camp; Management of Camps; Biography of Swami Vivekananda.

UNIT-V**9 Hrs**

Field Work - Rural visit- campaign- rally- Competitions.

Course Outcomes:

After the completion of this course, the learners will be able to:

1. Explain the role and functions of NSS.
2. Appraise the role of NSS volunteers in developing the society as a whole.
3. Develop the necessary skills of effective communication, leadership and healthy living.
4. Develop the necessary skills to mitigate disasters and other environmental challenges.
5. Develop consciousness about personal health and hygiene.

Text Books:

1. Communication Skills by N Rao & R P Das (HPH)
2. Biodiversity, Environment & Disaster Management by Shamna Hussain (Unique Publishers)

Reference Books:

1. NSS Manual published by the Ministry of Youth Affairs & Sports, Govt. of India
2. National Youth Policy Document
3. National Service Scheme - A Youth Volunteers Programme For Under Graduate Students as Per UGC Guidelines by J D S Panwar, A K Jain & B K Rathi (Astral)
4. Environmental Studies by P K Pandey (Mahaveer Publications)

IV Semester

Pathophysiology Specific to Respiratory Therapy - II

RTTT2504

L T P C
3 1 0 4

Course Description: This course offers a comprehensive overview of respiratory diseases, covering their etiology, pathophysiology, clinical manifestations, diagnosis, treatment, and prevention strategies. Through a combination of lectures, case studies, discussions, and hands-on activities, students will gain a deep understanding of various respiratory conditions, their impact on individual and public health, and current approaches to management.

Course Objective:

At the end of the course, students should be able.

1. Identify the disorders of pulmonary interstitium.
2. To understand the pulmonary vascular diseases.
3. To understand the pathology of toxic inhalation.
4. Understand the various conditions which can leads Respiratory failure.
5. Understand the pathological conditions of cardio vascular system.

UNIT -1

12hrs

Disorders of pulmonary interstitium:

- ✓ Interstitial lung disease,
- ✓ Idiopathic/Immunologic/Granulomatous diseases – Sarcoidosis,
- ✓ ALI,
- ✓ ARDS. (Definition, Etiological, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

UNIT -2

12hrs

Pulmonary vascular diseases:

- ✓ Thromboembolic disease,
- ✓ Pulmonary hypertension,
- ✓ pulmonary edema,
- ✓ Pulmonary embolism.
- ✓ Pulmonary Vasculitis
- ✓ Pulmonary hemorrhage(Definition, Etiological, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

UNIT -3**12hrs****Toxic inhalation:**

- ✓ Carbon-monoxide poisoning,
- ✓ Smoke inhalation,
- ✓ Toxic fume inhalation,
- ✓ Aspiration pneumonia,
- ✓ Drowning and Near-drowning. (Definition, Etiological, Pathophysiology, clinical manifestation, Investigations, Treatment and management).

UNIT -4**12hrs****Respiratory failure and other lung pathology:**

Tumors, Benign neoplasm of lung-bronchial carcinoids, Lung cancer – Etiology, Pathology, Classification, Staging and Treatment. Respiratory failure types, Pump failure, Pulmonary pathology leading to acute Respiratory failure and its management.

UNIT -5**12hrs****Pathology of cardio-vascular disease:**

- ✓ Pericardial disease: a) Pericardial effusion, b) Cardiac tamponade.
- ✓ Myocardial disease: a) Myocardial infarction, b) Cardiomyopathies.
- ✓ a) Cardiac Arrhythmias, b) Heart failure, c) Valvular heart disease.
- ✓ Congenital heart disease: a) Acyanotic heart disease, b) Cyanotic heart disease.

Total Hrs- 60hrs**Course Outcomes:**

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

1. Acquire a thorough knowledge about disorders of pulmonary interstitium.
2. Acquire a thorough knowledge about pulmonary vascular diseases.
3. Recognize and assess .
4. Recognize and assess restrictive lung diseases.
5. Acquire a knowledge about occupational lung diseases.

TEXT BOOKS:

- Egan's Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.

REFERENCE BOOKS:

- Textbook of Pathology – Harsh Mohan – 8th edition.
- Murray and Nadel's Textbook of Respiratory medicine, 2 Volume set - 7th edition.
- Shoemaker, Ayres, Greenvik, Holbrook, Textbook of Critical Care 4th edition

Diagnostic Techniques in Pulmonary diseases – I

RTTT2505

L T P C
3 1 0 4

Course Description:

This comprehensive course is designed to provide healthcare professionals with the knowledge and skills necessary for the accurate diagnosis of respiratory diseases. The course covers a range of topics including the anatomy and physiology of the respiratory system, common respiratory conditions, diagnostic techniques, and interpretation of diagnostic results. Students will learn through a combination of lectures, case studies, hands-on practice, and clinical simulations

Course objective:

At the end of the course, students should be able.

1. To understand the concept of pulmonary function testing.
2. Identify the various types of gas based pulmonary function tests.
3. To understand the quality assurance and to know the interpretation of PFT.
4. To understand the exercise testing to assess the respiratory system capacity and physiology.
5. To identify and understand the special tests which is used to assess mucociliary and bronchial functions.

UNIT-1

12hrs

Pulmonary function tests:

- ✓ Lung volume tests,
- ✓ Pulmonary mechanics,
- ✓ Significance of before and after Bronchodilator studies, Reversibility assessment
- ✓ PFT in children,
- ✓ The application of bedside pulmonary function studies,
- ✓ PEFr

UNIT-2**12hrs****Gas based pulmonary function tests:**

- ✓ Helium dilution tests,
- ✓ Nitrogen washout test,
- ✓ Body plethysmography,
- ✓ Dilution factors for Carbon monoxide (Single breath method, Steady state method).
- ✓ Testing for exercise induced asthma,

UNIT -3**12hrs****Quality assurance and interpretation in Spirometry:**

- ✓ Principles of measurement and significance, of spirometry,
- ✓ Affecting factors – Analytical – Non analytical,
- ✓ Interpreting spirometry Results
- ✓ Interpretation of various pattern of abnormal spirometry pattern and Reporting.

UNIT-4**12hrs****Exercise testing:**

- ✓ Six-minute walk test (6MWT)
- ✓ Cardio pulmonary exercise testing (CPET)
- ✓ TMT
- ✓ Shuttle walk test (Introduction, Indications, Purpose of the study, Study procedure, interpretation)

UNIT-5**12hrs****Other special tests:**

- ✓ Bronchial provocation tests: Quantitative Methacholine Challenge test,
- ✓ Sweat chloride test
- ✓ Allergic skin prick test
- ✓ Saccharine test (Introduction, Indications, Purpose of the study, Study procedure, interpretation)

Total Hrs: 60hrs**Course Outcomes:**

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

1. Demonstrate Comprehensive Knowledge of Pulmonary Function Test
2. Acquire a thorough knowledge about Gas based pulmonary function test.

3. Recognize and assess Quality assurance and interpretation in Spirometry.
4. Demonstrate Comprehensive Knowledge of exercise testing.
5. Implement Emerging Technologies in Diagnostics:

TEXT BOOKS:

- Manual of Pulmonary Function testing – Gregg Ruppel – 10th edition.
- Equipment theory for Respiratory care – Gary C White – 5th edition.

REFERENCE BOOKS:

- Egan’s Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.

Diagnostic Techniques in Pulmonary diseases – II

RTTT2506

L T P C
3 1 0 4

Course Description:

This comprehensive course is designed to provide healthcare professionals with the knowledge and skills necessary for the accurate diagnosis of respiratory diseases. The course covers a range of topics including the anatomy and physiology of the respiratory system, common respiratory conditions, diagnostic techniques, and interpretation of diagnostic results. Students will learn through a combination of lectures, case studies, hands-on practice, and clinical simulations

Course Obejective:

At the end of the course, students should be able.

1. To understand the interventional pulmonology.
2. To understand the gas exchange sampling and interpretation of arterial blood sampling.
3. To understand fundamentals of ECG analysis.
4. To understand the fundamentals of Polysomnography.
5. To understand the importance of pulmonary imaging sciences.

UNIT-1

12hrs

Interventional Pulmonology:

- ✓ Bronchoscopy – Rigid and Flexible, BAL, Bronchial wash.
- ✓ EBUS – Electrocautery, APC, Laser, Cryolung biopsy, Foreign body.
- ✓ Thoracoscopy – Rigid and Flexible lung biopsy.

- ✓ Fluoroscopy and Mediastinoscopy,
- ✓ Endobronchial ultrasound, Transtracheal aspiration-Intercostal drainage-Pleurocentesis-
Chest tube insertion and Monitoring.

UNIT-2

12hrs

Gas exchange sampling analysis and monitoring:

- ✓ Arterial blood gas analysis (ABG),
- ✓ Venous blood gas analysis (VBG),
- ✓ Hem-oximetry, Transcutaneous blood gas monitoring, Pulse-oximetry,
- ✓ Capnography, Capnometry, Evaluate/Acid base homeostasis.

UNIT-3

12hrs

Diagnosis of cardiovascular system:

Cardiac monitoring, ECG, Basics of ECG, 12 lead standard ECG placement, Assessment of arrhythmias, Interpretation of Rate, Rhythm and Waveform, basics of Echo cardiogram, Treadmill test.

UNIT-4

12hrs

Polysomnography:

- ✓ Ten-twenty placement, CNS wave monitoring,
- ✓ Cardiovascular monitoring,
- ✓ Respiratory monitoring,
- ✓ EOG, EMG placement.

UNIT-5

12hrs

Imaging sciences:

Chest X-Ray interpretation, Principle of X-Ray, Computerized Chest Tomography, Bronchography, Pulmonary angiography, MRI-Thorax, V/Q scan, Ultrasound-Thorax.

Total Hrs: 60hrs

Course Outcomes:

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

1. Demonstrate Comprehensive Knowledge of interventional pulmonology
2. Acquire a thorough knowledge about blood gas analyses instrumentation.
3. Recognize and assess about cardiovascular system.

4. Recognize and Demonstrate about the basic connections in sleep study.
5. Integrate about the imaging techniques in diagnosis of pulmonary diseases

TEXT BOOKS:

1. Manual of Pulmonary Function testing – Gregg Ruppel – 10th edition.
2. Equipment theory for Respiratory care – Gary C White – 5th edition.
3. LeoSchamroth An Introduction to Electrocardiography , Narasimhan C – 8th edition.

REFERENCE BOOKS:

1. Egan’s Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.
2. AIIMS-MAMC-PGI Imaging series: Diagnostic Radiology: Chest and Cardiovascular Imaging - 4th edition

CLINICAL SKILLS – II

RTTL2502

L T P C

0 0 20 10

Course Description: The Respiratory System Practical course is designed to provide students with hands-on experience and a comprehensive understanding of the respiratory system's anatomy, physiology, and clinical aspects. This course complements theoretical knowledge with practical skills essential for careers in healthcare, biomedical sciences, and related fields.

Course Objective:

At the end of the course, students should be able.

1. To understand the procedures in pulmonary function test and know how to interpret the spirometry values and parameters.
2. To understand the importance of exercise testing.
3. To understand procedure of bronchoscopy and to assist the bronchoscopy procedure.
4. To understand procedure of thoracoscopy and to assist the thoracoscopy procedure.
5. To understand the role of chest X-ray in pulmonary assessment.

Unit-1**60hrs****Pulmonary function testing:**

- ✓ Explain the basics of pulmonary functions.
- ✓ Identify the various pulmonary function tests and determine which are commonly performed by the medical assistant.
- ✓ Demonstrate how to perform spirometry test and interpret based on the results of pathophysiological conditions.
- ✓ Obtain the significant spirometry parameters (FEV₁/FVC, FVC, FEV₁)
- ✓ Differentiate between normal, Obstructive and Restrictive pattern of spirograms.

Unit-2**60hrs****Exercise testing:**

- ✓ Explain six minute walk test and demonstrate how the test will be performed.
- ✓ Indications of cardiopulmonary exercise testing. Explain the methodology, equipment's needed, modalities, protocols, measurements and graphic interrelationships safety and interpretation.
- ✓ Explain shuttle walk test and demonstrate how the test will be performed.

Unit-3**60hrs****Bronchoscopy:**

- ✓ Explain the parts of Rigid bronchoscope and Flexible bronchoscope.
- ✓ Describe the common indications, contraindications, complications and consequences of flexible bronchoscopy.
- ✓ Explain the complete pre-procedural evaluation.
- ✓ Demonstrate the trolley set up for bronchoscopy procedure.
- ✓ List the steps for proper disinfection of bronchoscope.
- ✓ Explain the proper assist technique of bronchoscopy as a Respiratory Therapy.

Unit-4**60hrs****Thoracoscopy:**

- ✓ Define thoracoscopy procedure. Explain the equipment's used in thoracoscopy.
- ✓ Explain the indications, contraindications, complications of thoracoscopy procedure.
- ✓ Differentiate VAT's vs medical thoracoscopy.
- ✓ Describe medical thoracoscopy in the diagnosis of pleural disease.
- ✓ Describe the therapeutic role of thoracoscopy in malignant pleural effusion.

Chest X-Ray:

- ✓ Describe how chest radiography is produced. Identify the four densities seen on chest radiograph.
- ✓ Explain how the relationship between the X-ray source and the patient affects the images viewed on the radiograph.
- ✓ State standard distance between X-ray source and film for posteroanterior chest film.
- ✓ Identify the clinical indications and contraindications for chest X-ray.
- ✓ Explain the technique, advantages and disadvantages of the following chest radiographic:
a) Posteroanterior, b) Left lateral c) anteroposterior d) Lateral decubitus e) Apical lordotic
f) Oblique.
- ✓ Describe correct position for ET-tube placement as seen on chest X-ray.
- ✓ Identify the value in assessing a chest radiography in the following situations: a) Central venous pressure line insertion b) Pulmonary artery catheter placement c) Nasogastric tube placement, e) Thoracocentesis, f) pericardiocentesis.
- ✓ Recognize and name the radiographic signs of atelectasis, consolidation, pneumothorax, pleural effusion and hyperinflation frequently seen in patient's with cardiopulmonary diseases.

Total Hrs: 300hrs**Course Outcomes:**

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

- Able to demonstrate the Pulmonary Function Test
- Understand and evaluate the Exercise testing.
- Recognize and assess the bronchoscopy procedure.
- Recognize and assess thoracoscopy procedure.
- Identify and interpret the Chest Radiographic images.

Text Book:

- Murray and Nadel's Textbook of Respiratory medicine, 2 Volume set - 7th edition.

Reference Books:

- Shoemaker, Ayres, Greenvik, Holbrook, Textbook of Critical Care 4th edition.
- Manual of Pulmonary Function testing – Gregg Ruppel – 10th edition.
- Equipment theory for Respiratory care – Gary C White – 5th edit

V Semester

Respiratory Therapy Techniques – I

RTTT3501

L T P C
3 1 0 4

Course Description: The primary objective of the Respiratory Therapy Techniques course is to equip students with the knowledge and practical skills necessary to assess, manage, and treat patients with respiratory disorders. By the end of the course, students should be proficient in a variety of respiratory therapy techniques and capable of applying these techniques effectively in clinical settings.

Course Objective:

At the end of the course, students should be able.

1. To understand the procedures in the management of airways by using artificial airways
2. To understand the maintenance of artificial airways.
3. To understand procedure of laryngeal and tracheal intubation.
4. To identify the patient's condition and monitoring in ICU
5. To understand the role of Respiratory therapist in management of ALI, ARDS conditions.

UNIT-1

12hrs

Artificial airways:

- ✓ Indications of Endotracheal intubation and its procedure, intubation criteria.
- ✓ Oropharyngeal airways.
- ✓ Nasopharyngeal airways.
- ✓ Signs and Symptoms of Partial and Complete upper airway obstruction, Artificial airways (Indications, Hazards of artificial airways).
- ✓ Establishing Emergency airways.
- ✓ Tracheostomy procedure, indications
- ✓ Techniques of intubation, Post intubation essentials.
- ✓ Cricothyroidectomy

UNIT-2

12hrs

Maintenance of artificial airways:

- ✓ Suctioning Procedure and Post intubation care.
- ✓ Incidence of airway contaminants, Common airway contaminants.

- ✓ Nosocomial Infections in Respiratory care.
- ✓ Humidification of the airways.
- ✓ Tracheostomy wound care.
- ✓ Cuff care (Inflation technique, Periodic deflation, Cuff leak).
- ✓ Inadvertent extubation, Extubation criteria.

UNIT-3

12hrs

Laryngeal and Tracheal Complications of artificial airways:

- ✓ Laryngeal complications and endotracheal intubations, Tracheostomy complications.
- ✓ Management of Sore throat and hoarse voice, Glotticedema, Sub-glotticedema, Ulceration of vocal cords, Tracheal mucosa, Tracheal stenosis.
- ✓ Prevention of Laryngeal and tracheal complications.

UNIT-4

12hrs

Monitoring patients in ICU:

- ✓ Principles of monitoring.
- ✓ Respiratory monitoring: Gas exchange, Monitoring lung and Chest wall, Monitoring strength and muscle endurance, Monitoring patient ventilator system, Monitoring during lung protective ventilation.
- ✓ Cardiac and cardiovascular monitoring: ECG – Arrhythmias diagnosis bedside interpretation of ECG tracing, Arterial blood pressure monitoring, CVP monitoring, RAP monitoring, PAP monitoring.
- ✓ Neurological monitoring.
- ✓ Monitoring Renal function.
- ✓ Nutritional monitoring.

UNIT-5

12hrs

ALI, ARDS MODS and its management:

Risk factors, Pathophysiology, Histopathology and Clinical corrections to ARDS, Therapeutic approach to ARDS, Role of Respiratory Therapist's in ALI and ARDS management.

Total Hrs: 60hrs

Course Outcomes:

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

1. Conduct thorough respiratory assessments and interpret relevant airway maintenance.
2. Apply a range of respiratory therapy techniques in airway management.
3. Manage patients complications those who requiring laryngeal and tracheal airway management.
4. Assessing and monitoring patients in ICU and managing their respiratory health.
5. Demonstrate professional and ethical behavior in the aspects of managing patient's with lung injury.

This course will combine theoretical knowledge with hands-on clinical practice, ensuring that students are well-prepared to provide high-quality respiratory care in various healthcare settings.

Text Book:

- Equipment theory for Respiratory care – Gary C White – 5th edition.

Reference Books:

- Egan's Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.
- LeoSchamroth An Introduction to Electro cardiography, Narasimhan C – 8th edition.

Respiratory Therapy Techniques – II

RTTT3502

L T P C
3 1 0 4

Course Description: The primary objective of the Respiratory Therapy Techniques course is to equip students with the knowledge and practical skills necessary to assess, manage, and treat patients with respiratory disorders. By the end of the course, students should be proficient in a variety of respiratory therapy techniques and capable of applying these techniques effectively in clinical settings.

Course Objective:

At the end of the course, students should be able.

1. To understand the oxygen deliver devices.
2. To understand the administration of oxygenation.
3. To understand the administration of other medical gas therapies.

4. To identify the patient's humidification condition and deliver the appropriate humidification therapy via humidifier.
5. To understand the role of Respiratory therapist in airway clearance techniques.

UNIT-1

12hrs

Oxygen delivery devices:

- ✓ Low flow oxygen therapy (Nasal cannula, Transtracheal oxygen catheter, Simple oxygen mask, Non-Rebreathing mask).
- ✓ High flow oxygen therapy (Venturi mask, Non-Rebreathing mask, HFNC, Head box, Face tent).
- ✓ Oxygen concentrators.

UNIT-2

12hrs

Oxygen administration:

- ✓ General goals and clinical objectives, Assessing the need for oxygen therapy, Precautions and hazards of supplemental oxygen, Oxygen toxicity, Indications of oxygen therapy, oxygen administration in special conditions – Hypoxemia, Hypoxic pulmonary vasoconstriction, Shunting.
- ✓ Hyperbaric oxygen therapy (Physiologic effects, Methods of administration, Indications, Complications and Hazards).

UNIT-3

12hrs

Other Medical gas therapies:

- ✓ Nitric oxide therapy.
- ✓ Helium – oxygen therapy.
- ✓ Carbondioxide – Oxygen (Carbogen) therapy.

UNIT-4

12hrs

Humidity therapy:

- ✓ Define Humidity, Humidifier.
- ✓ Indications of humidifier,
- ✓ Types of humidifier,
- ✓ Contraindications of humidifier.

Aerosol therapy:

- ✓ Define aerosol drug delivery method,
- ✓ Indications of aerosol therapy,
- ✓ Cross contamination control.

UNIT-5

12hrs

Airway clearance therapy:

- ✓ Physiology and Pathophysiology of airway clearance.
- ✓ General goals and indications.
- ✓ Airway clearance methods – Chest physiotherapy, huff coughing technique.
- ✓ PEP devices
- ✓ Selecting appropriate airway clearance techniques in specific patients.

Total Hrs: 60hrs

Course Outcomes:

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

1. Execute oxygen therapy techniques with precision and adapt interventions based on patient response.
2. Conduct thorough respiratory assessments, interpret and provide oxygen therapy.
3. Identify various types of medical gas therapy.
4. Assessing and able to provide aerosol and humidity therapy.
5. Demonstrate professional aspects to clear airway secretions.

This course will combine theoretical knowledge with hands-on clinical practice, ensuring that students are well-prepared to provide high-quality respiratory care in various healthcare settings.

Text Book:

- Equipment theory for Respiratory care – Gary C White – 5th edition.

Reference Books:

- Egan's Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.

Instrumentation and Troubleshooting Specific to Respiratory Therapy

RTTT3503

L T P C
3 1 0 4

Course Description: This course typically involves teaching students how to operate, maintain and troubleshooting various respiratory therapy devices used in clinical settings. This includes understanding the principles behind these instruments, their components, calibration, safety protocols and troubleshooting techniques to ensure optimal patient care and equipment functionality.

Course Objective:

At the end of the course, students should be able.

1. To understand the oxygen supply system.
2. To understand the aerosol delivery devices.
3. To understand the PFT and the fundamentals of its troubleshooting.
4. To identify the interventional pulmonology and their troubleshooting.
5. To understand the role of other Respiratory therapy equipment's and their troubleshooting.

UNIT-1

12hrs

Oxygen Supply System:

- ✓ Storage of medical gases.
- ✓ Identification of medical cylinders.
- ✓ Calculation of cylinder contents.
- ✓ Medical gas piping, Liquid oxygen systems.
- ✓ Flow meters and regulators.
- ✓ Oxygen concentrators.

UNIT-2

12hrs

Aerosol delivery devices:

- ✓ Nebulizers – Jet, Ultrasonic.
- ✓ Humidifiers.
- ✓ Inhalers – MDI, DPI, Spacers.

UNIT-3

12hrs

Pulmonary function testing equipments:

- ✓ Spirometer, Types, Principle, Mechanism
- ✓ Body Plethysmography.
- ✓ DLCO.
- ✓ Peak Flow Meter.
- ✓ Equipment maintenance.
- ✓ Basis of troubleshooting.

UNIT-4

12hrs

Scopes

- ✓ Bronchoscope (Rigid bronchoscope, Flexible fiber optic bronchoscope, Equipment maintenance).
- ✓ Thorascopes, Mediastinoscope, Fluoroscopes, EBUS.

UNIT-5

12hrs

Other Equipments:

- ✓ Oximeters.
- ✓ Blood gas electrodes.
- ✓ Electro cardiogram.
- ✓ Laryngoscope.
- ✓ Suction apparatus (Working principle, Equipment maintenance).

Total Hrs: 60hrs

Course Outcomes:

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

1. Develop the ability to identify, troubleshoot, and resolve common issues with oxygen therapy equipment.
2. Understand and resolve common issues and regulatory requirements related to Aerosol therapy equipment.
3. Assessing and able identify, troubleshoot and resolve common issues with Pulmonary function test.
4. Demonstrate the assessment and troubleshooting of bronchoscopy procedure.
5. Demonstrate professionalism and ethical behavior in the management of other respiratory therapy equipment.

Text Book:

- Equipment theory for Respiratory care – Gary C White – 5th edition.

Reference Books:

- Manual of Pulmonary Function testing – Gregg Ruppel – 10th edition.
- LeoSchamroth An Introduction to Electrocardiography , Narasimhan C – 8th edition.

CLINICAL SKILLS – III**RTTL3501****L T P C****0 0 16 8**

Course Description: The Respiratory System Practical course is designed to provide students with hands-on experience and a comprehensive understanding of the respiratory system's anatomy, physiology, and clinical aspects. This course complements theoretical knowledge with practical skills essential for careers in healthcare, biomedical sciences, and related fields.

Course Objective:

At the end of the course, students should be able.

1. To understand the procedures in airway management.
2. To understand the indications of ET-intubation and to know the procedures of oral ET-intubation.
3. To understand suctioning procedures and their indications.
4. To understand the Humidification therapy.
5. To understand the Aerosol therapy.

Unit-1**48hrs****Airway management:**

- ✓ Describe the signs of respiratory distress.
- ✓ How to assess the need for an artificial airways.
- ✓ Describe how to open an airway of a victim who does not have spinal injury.
- ✓ Describe how to open an airway of a victim who is suspected with spinal injury.
- ✓ State the function of an oropharyngeal airway and list the steps for its insertion.
- ✓ State the function of an nasopharyngeal airway and list the steps for its insertion.

- ✓ Explain the indications and contraindications of OPA and NPA.

Unit-2

48hrs

Endotracheal intubation:

- ✓ Define endotracheal intubation. List the various types of endotracheal tube.
- ✓ List the indications, contraindications and cautions of endotracheal tube.
- ✓ Identify the equipment's required for endotracheal intubation via the oral passage.
- ✓ Explain how to prepare the patient.
- ✓ Describe the insertion technique of ET-tube.
- ✓ Demonstrate the care of the patient's with a ET-tube.
- ✓ Perform endotracheal tube extubation.
- ✓ Demonstrate the care of patient following extubation.

Unit-3

48hrs

Suctioning:

- ✓ Define suctioning. List the site for suctioning
- ✓ Select the correct size suction catheter according to the age and size of the patient.
- ✓ Understand the difference between oropharyngeal/nasopharyngeal suctioning and endotracheal/tracheostomy suctioning.
- ✓ Demonstrate how to measure the proper suction depth for suctioning.
- ✓ Mention the indications and contraindications of suctioning.
- ✓ Understand different techniques of how to sooth patient's during suctioning in order to make the experience as comfortable as possible.

Unit-4

48hrs

Humidifier:

- ✓ Explain humidity, humidification, humidifier.
- ✓ Explain the types of humidifiers.
- ✓ Clinical signs and symptoms of inadequate humidification.
- ✓ Describe how different types of humidifiers works.
- ✓ Identify the indications, contraindications and hazards that pertain to humidification during mechanical ventilation.
- ✓ State how to select the appropriate therapy to condition a patient's inspired gas.

Unit-5

48hrs

Aerosol therapy

- ✓ Define the term “Aerosol”.
- ✓ Describe how particle size, motion and airway characteristics affect aerosol deposition.
- ✓ Describe how aerosol particles are generated.
- ✓ List the hazards associated with aerosol therapy.
- ✓ Describe how to select the best aerosol drug delivery system for a patient.
- ✓ Describe inhalers by their modes of aerosol delivery: metered dose inhaler, dry powder inhaler, propellant free liquid inhalers or nebulizers.

Total Hrs: 240hrs

Course Outcomes:

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

1. Able to provide airway management.
2. Understand and evaluate the Endotracheal intubation.
3. Recognize and able to clear airway secretions by suctioning.
4. Able to provide humidification.
5. Identify and able to provide aerosol therapy.

Text Book:

- Equipment theory for Respiratory care – Gary C White – 5th edition.

Reference Books:

- Manual of Pulmonary Function testing – Gregg Ruppel – 10th edition.
- Equipment theory for Respiratory care – Gary C White – 5th edit

**Programme Specific Elective-I
Choice - 1**

Advanced Respiratory Therapy in Adult ICU Care – I

RTTT3601a

**L T P C
3 0 0 3**

Course Description:

This course provides comprehensive training in the assessment, treatment, and management of respiratory disorders in adult patients. Students will learn about respiratory anatomy and physiology, pathophysiology, pharmacology, and various therapeutic interventions. Emphasis is placed on developing clinical competencies, critical thinking skills, and professional behaviors necessary for effective respiratory care.

Course Objective:

At the end of the course, students should be able.

1. To understand the infection controls and their ICU managements.
2. To understand the ICU managements of Various animals bites.
3. To understand the ICU managements of suicidal and homicidal conditions
4. To identify the patient's respiratory diseases condition and their ICU managements
5. To understand the role of Respiratory therapist in managing various respiratory disease conditions with advanced ICU care.

UNIT -1

9hrs

Infection control in ICU:

- ✓ Sepsis and ICU Management.
- ✓ Ventilator associated pneumonia in ICU and the management.
- ✓ Pulmonary tuberculosis and its ICU management.
- ✓ Sterilisation techniques and disinfection in ICU

UNIT -2

9hrs

Animal Bites Emergency Care:

- ✓ Snakebite and its management
- ✓ Scorpion bite and its management
- ✓ Dog bite, Rabies and its managements

UNIT -3**9hrs****Suicidal and Homicidal Emergencies:**

- ✓ Hanging and its management.
- ✓ Drowning, Near drowning and its management.
- ✓ Bunt and sharp injuries of thoracic cavity and its management.
- ✓ Organo phosphorous poisoning and its management

UNIT -4**9hrs****Respiratory disorders and their ICU management - I:**

- ✓ Acute and Chronic Respiratory failure.
- ✓ Aspiration Pneumonia, Aspiration pneumonitis.
- ✓ Acute severe asthma
- ✓ COPD
- ✓ Pulmonary embolism
- ✓ Pulmonary edema

UNIT -5**9hrs****Respiratory disorders and their ICU management - II:**

- ✓ ARDS.
- ✓ Post-operative atelectasis.
- ✓ Pleural effusion.
- ✓ Empyema.
- ✓ Bronchopleural fistula
- ✓ Lung abscess.

Total Hrs: 45hrs**Course Outcomes:**

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

1. Able to Identify and describe common respiratory infections and their pathophysiology.
2. Administer and manage as respiratory therapist for animal bites.
3. Perform emergency management for suicidal and homicidal conditions
4. Demonstrate proficiency in the use of respiratory care equipment in managing ICU patients
5. Adhere to ethical and legal standards in respiratory care practice in ICU management

Text Book:

- Equipment theory for Respiratory care – Gary C White – 5th edition.

Reference Books:

- Egan's Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.
- The Washington Manual of Critical Care, by Chad A. Witt, Marin H. Kollef and Warren Isakow.

Choice – 2**Neonatal and Pediatric Respiratory Care – I****RTTT3601b****L T P C
3 0 0 3****Course Description:**

The Neonatal Respiratory Care course is designed to equip healthcare professionals with specialized knowledge and skills to care for neonates with respiratory disorders. This course focuses on the unique physiological and medical needs of newborns, emphasizing the assessment, treatment, and management of neonatal respiratory conditions.

Course Objective:

At the end of the course, students should be able.

1. To understand the normal fetal anatomical and physiological development.
2. To understand the importance of assessing and monitoring the neonates in ICU.
3. To understand the modules of diseases in neonates.
4. To understand the congenital anomalies
5. To understand the congenital cyanotic heart diseases.

UNIT -1**9hrs****Fetal Development and Fetal Physiology:**

- ✓ Normal fetal development and its stages.
- ✓ Labour delivery and Physiological Changes following birth.
- ✓ Assessment of Fetal Growth and development
- ✓ Role of Respiratory Therapist during delivery

UNIT -2**9hrs****Neonatal assessment and care:**

- ✓ Neonatal assessment
- ✓ General consideration of continuing care
- ✓ Surfactant therapy
- ✓ Assessment of oxygenation and vital's

UNIT -3**9hrs****Module of diseases in neonate's**

Perinatal lung diseases: Respiratory distress syndrome (RDS), Transient Tachypnea of new born (definition, etiology, pathophysiology, evaluations, clinical presentations, treatment and managements of RDS, TTN).

UNIT -4**9hrs****Congenital diseases:**

Congenital diaphragmatic hernia, Abdominal wall abnormalities, Chest wall diseases (definition, epidemiology, etiology, pathophysiology, clinical features, Diagnosis, treatment and managements of CDH, Congenital chest wall and abdominal wall abnormalities).

UNIT -5**9hrs****Congenital Cyanotic Heart diseases:**

Definition, Epidemiology, Pathophysiology, Clinical manifestations, Diagnosis, Treatment and managements of Tetralogy of fallot (TOF) and Transposition of great arteries.

Total Hrs: 45hrs

Course Outcomes:

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

1. Understand the anatomical and physiological development in neonates.
2. Identify and describe neonatal assessment care.
3. Able to recognize modules of diseases in neonates
4. Identify and understand congenital diseases
5. Adhere knowledge of congenital cyanotic heart diseases

Text Book:

- Cloherty and Stark's Manual of Neonatal Care – Eric C. Eichenwald, Anne R. Hansen, Camilia R. Martin, Ann R. Stark.

Reference Books:

- Neonatal ICU protocols – Neelam Kler, Pankaj Garg, Anup Thakur.
- AIIMS Protocols in Neonatology Core Protocols by Ramesh Agarwal, Ashok Deorari, Vinod K Paul, M Jeeva Sankar, Anu Sachdeva. (Volume-1,2)

Mechanical Ventilation – I

RTTT3601c

L T P C
3 0 0 3

Course Description: This course typically involves teaching students about the basics of ventilator, classification, operating modes, management, trouble shooting of ventilator. It includes principles behind these instruments, their components, calibration, safety protocols and techniques to ensure optimal patient care and equipment functionality

Course Objective:

At the end of the course, students should be able

1. To understand the basics of mechanical ventilation
2. To understand the classification, operating modes of mechanical ventilation
3. To understand the Initiation of NIV and HFNC, knobology, management of mechanical ventilation
4. To assist in Intubation and Tracheostomy,
5. To gain knowledge about sedatives , relaxant and other drugs

UNIT-1

9hrs

MECHANICAL VENTILATION

Introduction, History of mechanical ventilators, How the Ventilator works, ventilator classification, control variables, phase variables, Terminology of ventilation modes, output waveforms, alarm systems, principles of mechanical ventilation-airway resistance, lung compliance, dead space ventilation, oxygenation failure, ventilatory failure,

UNIT-2**9hrs****AIRWAY MANAGEMENT IN MECHANICAL VENTILATION:**

Introduction , Intubation ,common artificial airway in mechanical ventilation, Intubation procedure,types, difficult airway assessment and guidelines, Management of endotracheal and tracheostomy tubes, complication of endotracheal and tracheostomy tubes

UNIT-3**9hrs****OPERATING MODES OF MECHANICAL VENTILATION**

Introduction, Negative and positive pressure ventilation

1. Controlled mandatory ventilation [CMV]-Indication, Advantage and Disadvantages of control mode
2. Assist/ control [AC]- Indication, Advantage and Disadvantages of Assist control mode
3. Synchronized intermittent mandatory ventilation [SIMV]-Indication, Advantage and Disadvantage of SIMV
4. Pressure Support Ventilation [PSV] -Indication , Advantage and Disadvantage of PSV mode

UNIT-4**9hrs****INITIATION OF MECHANICAL VENTILATION**

Introduction, goals of mechanical ventilation, Indications, contraindications, Initial ventilator settings [knobology], Alarm settings, Hazards and complications

MONITORING IN MECHANICAL VENTILATION -Introduction, vital signs, Chest inspection -chest movements, auscultation, imaging, fluid balance, oxygen saturation monitoring, end tidal carbon dioxide monitoring. Effects of positive pressure ventilation and PEEP.

UNIT-5**9hrs****MANAGEMENT OF MECHANICAL VENTILATION**

Introduction, basic management strategies, strategies to improve oxygenation, strategies to improve ventilation, ABG based ventilator settings, care of the ventilator circuit, care of the artificial airway

TOTAL Hrs: 45 hrs**COURSE OUTCOMES:**

By the end of this course, students will be able to

1. Operate and control the ventilator,
2. Initiate, titrate and adjust NIV and HFNC Settings
3. Decision making and assisting in intubation and tracheostomy

4. Change the different modes of mechanical ventilation according to the patient's demand and situation
5. Titrate the ventilator settings according to the patient's demand

TEXT BOOK

- Clinical application of mechanical ventilation 4th edition by DAVID CHANG

REFERENCE BOOKS

- Pilbeam's mechanical ventilation 7th edition by J.M. CARIO
- EGAN'S Fundamentals of respiratory 12th edition by ROBERT .M.KACMAREK,
JAMES K.STOLLER

VI Semester

Polysomnography

RTTT3504

L T P C
3 1 0 4

Course Description: Polysomnography (PSG) courses are designed to train individuals in the comprehensive assessment and diagnosis of sleep disorders through sleep studies. The outcomes of such courses typically include both theoretical knowledge and practical skills. Here are the key outcomes one might expect from a polysomnography course.

Course Objective:

At the end of the course, students should be able.

1. To understand the physiology of normal sleep and control of breath during sleep.
2. To understand the classifications of sleep disorders.
3. To understand the pathophysiology of OSA and CSA and their management.
4. To know how to score the sleep study and interpret the stages of sleep.
5. To know how to do the PAP titration.

UNIT-1

12hrs

Introduction to Polysomnography:

- ✓ Definition of sleep.
- ✓ Historical development of polysomnography and clinical assessment of sleepiness.
- ✓ Physiology of normal sleep cycle.
- ✓ Describe the control of breathing during sleep.

UNIT-2

12hrs

Sleep study scoring and interpretation:

- ✓ Polysomnography and Levels of sleep study.
- ✓ MSLT.
- ✓ MWT.
- ✓ Actigraphy.

UNIT-3

12hrs

Classification of sleep disorder:

- ✓ Dysomnia: Intrinsic sleep disorder, Extrinsic sleep disorder, Circadian Rhythm sleep disorder.
- ✓ Parasomnias: Arousal disorders, Sleep walk transition disorders, Parasomnias usually associated with REM sleep, other parasomnias (Sleep bruxism, sleep related abnormal swallowing syndrome, Sleep enuresis).

UNIT-4

12hrs

Obstructive Sleep Apnea: Epidemiology, Pathophysiology, Risk factors, Cardiorespiratory changes, Clinical manifestation, Clinical evaluation, Polysomnographic presentation, treatment and management.

Central Sleep Apnea: Definition, Etiology, Pathophysiology, Clinical characteristics and consequences, Polysomnographic presentation, treatment and management.

UNIT-5

12hrs

CPAP and BIPAP titration:

CPAP study parameters, Determine optimal CPAP levels, Monitoring for patient safety and compliance, BIPAP titration, Determine optimal CPAP levels appropriate for patient's pathological condition.

Patient education on PAP therapy (Interface, machine maintenance), side effects associated with CPAP and BIPAP therapy.

Total Hrs: 60hrs

Course Outcomes:

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

1. Acquire a knowledge about introduction of polysomnography
2. Able to describe, Score and interpret the sleep study.
3. Explain the classification of sleep disorder.
4. Able to describe and assess OSA and CSA pattern
5. Identify and able to titrate CPAP and BIPAP titration

Text Book:

- Meir H. Kryger MD. FRCPC a Principles and Practice of Sleep Medicine – 6th edition.

Reference Books:

- Kryger MD. FRCPC Atlas of Clinical Sleep Medicine – 3rd edition

Pulmonary Rehabilitation

RTTT3505

L T P C

3 1 0 4

Course Description: Pulmonary rehabilitation courses are designed to provide respiratory therapist with the knowledge and skills needed to develop and deliver effective rehabilitation programs for patients with chronic respiratory diseases.

Course Objective:

At the end of the course, students should be able.

1. To understand the concept of PR and able to select and assess the PR candidate.
2. To understand the importance of individualized educational program.
3. To understand the significance of exercise training and its assessment.
4. To know how to approach a disease specific patient's.
5. To know how to approach a disease specific and pulmonary resection and surgical patient's.

UNIT-1

12hrs

Introduction to Pulmonary Rehabilitation:

- ✓ Overview of Pulmonary Rehabilitation.
- ✓ Selecting and assessing the Pulmonary Rehabilitation candidate.
- ✓ Indications of Pulmonary Rehabilitation

UNIT-2

12hrs

Collaborative self management education:

- ✓ Developing an individualized educational program.
- ✓ Educational content to patients and patient's attender about their specific disease condition and their management.
- ✓ Importance of visiting a medical emergency in correct time.

UNIT-3

12hrs

Exercise assessment and training:

- ✓ Exercise assessment: Six minute walk test, Cardiopulmonary exercise testing, Shuttle walk test.
- ✓ Exercise training: Respiratory muscle training, Upper limb and Lower limb extremities training, Aerobic exercises, Breathing exercises.

UNIT-4

12hrs

Disease specific approaches in Pulmonary Rehabilitation – I:

- ✓ Chronic obstructive pulmonary disease.
- ✓ Asthma.
- ✓ Cystic fibrosis.
- ✓ Non-cystic fibrosis (Bronchiectasis).
- ✓ Interstitial lung diseases

UNIT-5

12hrs

Disease specific approaches in Pulmonary Rehabilitation – I

- ✓ Obesity related respiratory disorder.
- ✓ Pulmonary hypertension.
- ✓ Chest wall and neuromuscular diseases.
- ✓ Lung cancer.
- ✓ Lung resection surgery and Lung transplantation surgery

Course Outcomes

Total Hrs: 60hrs

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

1. Acquire a knowledge about introduction of pulmonary rehabilitation
2. Able to describe and manage pulmonary disease condition.
3. Demonstrate and explain exercise assessment and training.
4. Identify and provide respiratory disease specific management
5. Identify and specific rehabilitation management of pulmonary diseases

Text Book:

- Guidelines of Pulmonary Rehabilitation – 5th edition.

Reference Books:

- Enrico Clini, Anne E. Holland, Fabio Pitta, Thierry Troosters Textbook of Pulmonary Rehabilitation – 1st edition.
- Eleanor Main, Linda Denehy Cardiorespiratory Physiotherapy (adults and pediatrics) – 5th edition.
- JOHN E. HODGKIN, Bartolome R. Celli, GERILYNN L. CONNORS Pulmonary Rehabilitation Guidelines to Success – 4th edition.

Life support system

RTTT3506

L T P C

3 1 0 4

Course Description: A life support system course is designed to train healthcare professionals in the principles, operation, and management of life support systems used in various clinical settings, such as intensive care units (ICUs), emergency departments, and during patient transport. The course aims to equip participants with the skills and knowledge necessary to provide advanced life support to critically ill patients.

Course Objective:

At the end of the course, students should be able.

1. To understand the concept of the universal algorithm for adult ECC.
2. To understand the algorithms of cardiac life support, bradycardia and tachycardia treatments.
3. To understand the role of Respiratory Therapist in management of critical care patient's.
4. To understand the role of Respiratory Therapist in emergency procedures.
5. To know how to approach a traumatic patients and how to manage the patient's as a Respiratory Therapist.

UNIT-1

12hrs

Introduction:

- ✓ BLS.
- ✓ The universal algorithm for adult ECC.
- ✓ ACLS

UNIT-2

12hrs

Life support system algorithms:

- ✓ Ventricular fibrillation/Pulseless ventricular tachycardia algorithms.
- ✓ Pulseless electrical activity (PEA)/Asystole algorithm.
- ✓ Bradycardia treatment algorithm.
- ✓ Tachycardia treatment algorithm.

UNIT-3**12hrs****Critical care management:**

- ✓ Hypotension/Shock.
- ✓ Acute myocardial infarction.
- ✓ Pediatric advanced life support.
- ✓ Airway management.
- ✓ Drugs used in ACLS.
- ✓ Emergency cardiac pacing.

UNIT-4**12hrs****Emergency procedures:**

- ✓ Defibrillation.
- ✓ AED.
- ✓ Techniques for oxygenation and ventilation.

UNIT-5**12hrs****Trauma management:**

- ✓ Thoracic trauma – Tension pneumothorax, Open pneumothorax.
- ✓ Abdominal trauma – Blunt injuries, Penetrating injuries.
- ✓ Head trauma.
- ✓ Trauma in pregnant women.

Course Outcomes:**Total hrs: 60hrs**

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

1. Acquire a knowledge about role and importance of life support systems in critical care.
2. Able to describe and explain algorithms of life support system provided in specific condition.
3. Demonstrate and explain critical care management.
4. Identify and assess emergency procedures
5. Able to provide management of traumatic patient's

Text Book:

- International trauma life support manual – Campbell – 7th edition.

Reference Books:

- Prehospital trauma life support 6th edition – Elsevier.
- Trauma management in emergency medicine approach – Ferrera, Colcciello max, Veroile Gibbs.
- Emergency medicine Textbook of Trauma – 1st edition – Pramodkumar.
- Trauma care manual – 2nd edition Ian greaves, Keith porter and jeff Garner.

CLINICAL SKILLS - IV

RTTL3502

L T P C
0 0 16 8

Course Description: The Respiratory System Practical course is designed to provide students with hands-on experience and a comprehensive understanding of the respiratory system's anatomy, physiology, and clinical aspects. This course complements theoretical knowledge with practical skills essential for careers in healthcare, biomedical sciences, and related fields.

Course Objective:

At the end of the course, students should be able.

1. To understand the concept and administration of Non-invasive ventilation.
2. To understand the indications and complications and administrations of Mechanical ventilation.
3. To understand significance of airway clearance techniques.
4. To understand the role of Respiratory Therapist in ventilatory muscle training and improving breathing pattern.
5. To understand the role of Respiratory Therapist in sleep disease scoring and management.

Unit-1

48hrs

Non-invasive ventilation:

- ✓ What is NIV. Differentiate the difference between CPAP and BIPAP.
- ✓ Discuss the patient interfaces, types of ventilation and modes of ventilation.
- ✓ Discuss the initiation and management of NIV in acute care setting.
- ✓ Explain the indications and complications of NIV.
- ✓ Demonstrate the troubleshooting of NIV.

Unit-2**48hrs****Mechanical ventilation:**

- ✓ Define mechanical ventilation. State the purpose of mechanical ventilation.
- ✓ List the indications and complications of mechanical ventilation.
- ✓ Differentiate the positive pressure ventilation and negative pressure ventilation.
- ✓ Describe the classification of different modes of ventilation.
- ✓ Describe the ventilator parameters.
- ✓ Recognize common causes of alarms.
- ✓ Explain the weaning process.

Unit-3**48hrs****Airway clearance:**

- ✓ Describe how normal airway clearance mechanism works and the factors that can impair their function.
- ✓ Identify the pulmonary diseases associated with abnormal clearance of secretions.
- ✓ State the goals and clinical indications for bronchial hygiene therapy.
- ✓ Describe the proper technique and potential benefits of each of the following: a)Chest physiotherapy (Postural drainage, Percussion, Vibration), b)Directed coughing and related expulsion techniques, c)Positive expiratory pressure(PEP) therapy, d)High frequency compression/oscillation methods.
- ✓ Evaluate a patient's response to airway clearance therapy.

Unit-4**48hrs****Ventilator muscle training:**

- ✓ Describe in detail about exercise assessment like 6MWT, CPT before prescribing ventilator muscle training.
- ✓ What are the two types of inspiratory muscle training.
- ✓ Explain the inspiratory muscle training devices.
- ✓ Explain the indications of ventilator muscle training.

Unit-5**48hrs****Polysomnography:**

- ✓ Explain polysomnography and levels of sleep study.
- ✓ List the indications of polysomnography.
- ✓ Explain ten twenty system, ECG, EOG, EMG, thoracic belt, abdominal belt placement.

- ✓ Describe the patient preparation before the sleep study.
- ✓ Explain the scoring system: a)Respiratory scoring, b)Cardiac scoring c)other sleep related abnormalities.
- ✓ Identify the interpretation of OSA based on AHI value.

Total Hrs: 240hrs

Course Outcomes:

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

1. Assess and provide non-invasive ventilation.
2. Recognize and able to provide mechanical ventilation.
3. Understand, evaluate and provide airway clearance techniques.
4. Able to provide ventilatory muscle training exercises.
5. Demonstrate and interpret sleep study.

Text Book:

- Equipment theory for Respiratory care – Gary C White – 5th edition.

Reference Books:

- Manual of Pulmonary Function testing – Gregg Ruppel – 10th edition.
- Equipment theory for Respiratory care – Gary C White – 5th edition.
- Meir H. Kryger MD. FRCPC a Principles and Practice of Sleep Medicine – 6th edition.
- Meir H. Kryger MD. FRCPC Atlas of Clinical Sleep Medicine – 3rd edition.
- Guidelines of Pulmonary Rehabilitation – 5th edition.

**Programme Specific Elective-II
Choice - 1**

Advanced Respiratory Therapy in Adult ICU Care – II

RTTT3602a

**L T P C
3 0 0 3**

Course Description:

This course provides comprehensive training in the assessment, treatment, and management of respiratory disorders in adult patients. Students will learn about respiratory anatomy and physiology, pathophysiology, pharmacology, and various therapeutic interventions. Emphasis is placed on developing clinical competencies, critical thinking skills, and professional behaviours necessary for effective respiratory care.

Course Objective:

At the end of the course, students should be able.

1. To understand the cardiovascular diseases and its managements.
2. To understand the procedures and techniques used in management of cardiovascular diseases
3. To understand the emergency management in special resuscitation conditions.
4. To identify the patients particular environmental injuries and its ICU management
5. To understand the role of Respiratory therapist in managing pre-operative patients in ICU setup.

UNIT -1

9hrs

Cardiovascular diseases and its management - I:

- ✓ Acute myocardial infraction and its managements.
- ✓ Heart block and its ICU managements
- ✓ Coronary Artery Bypass Grafting (CABG).
- ✓ Aortic valve stenosis and its management
- ✓ Mitral valve stenosis and its management

UNIT -2

9hrs

Cardiovascular diseases and its management – II:

- ✓ Aortic Valve Regurgitation.
- ✓ Mitral Valve Regurgitation.
- ✓ Congestive heart failure.
- ✓ Pre and post operative management of cardiac surgery patients.
- ✓ Intra-aortic balloon pump

UNIT -3**9hrs****Special Resuscitation Situations:**

- ✓ Hypothermia
- ✓ Electric shock
- ✓ Pre-Eclampsia and Eclampsia

UNIT -4**9hrs****Environmental injuries and ICU management:**

- ✓ Thermal injuries
- ✓ Smoke inhalation injuries
- ✓ Toxic fume inhalation injuries
- ✓ Near drowning and ICU managements

UNIT -5**9hrs****Post-Operative ICU managements:**

- ✓ Cardiac transplantation.
- ✓ Lung transplantation.
- ✓ Thoracic cavity related surgeries

Total Hrs: 45hrs**Course Outcomes:**

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

1. Able to Identify and describe cardiovascular diseases and their management
2. Administer and manage as cardiovascular diseases condition.
3. Able to perform special resuscitation situations
4. Demonstrate proficiency in the use of respiratory care equipment in managing environmental injuries
5. Adhere to provide post operative management in ICU care

Text Book:

- Equipment theory for Respiratory care – Gary C White – 5th edition.

Reference Books:

- Egan's Fundamentals of Respiratory care Robert M. Kacmarck, James K. Stoller, Albert J. hewer – 12th edition.
- The Washington Manual of Critical Care, by Chad A. Witt, Marin H. Kollef and Warren Isakow.

Choice – 2

Neonatal and Pediatric Respiratory Care – II

RTTT3602b

L T P C
3 0 0 3

Course Description:

The Neonatal Respiratory Care course is designed to equip healthcare professionals with specialized knowledge and skills to care for neonates with respiratory disorders. This course focuses on the unique physiological and medical needs of newborns, emphasizing the assessment, treatment, and management of neonatal respiratory conditions.

Course Objective:

At the end of the course, students should be able.

1. To understand the congenital acyanotic heart diseases
2. To understand the modules of diseases in neonates.
3. To understand the airway clearance techniques in neonates and pediatrics
4. To understand the techniques uses for airway management.
5. To understand the concepts of mechanical ventilation in neonates.

UNIT -1

9hrs

Congenital Acyanotic Heart diseases :

- ✓ Ventricular Septal Defect
- ✓ Atrial Septal Defect
- ✓ Patent ductus arteriosus

UNIT -2

9hrs

Module of diseases in Pediatric patients's:

- ✓ Sudden infant death syndrome
- ✓ Gastroesophageal reflux diseases
- ✓ Bronchiolitis
- ✓ Croup
- ✓ Epiglottitis
- ✓ Cystic fibrosis

UNIT -3**9hrs****Airway clearance techniques in neonates and paediatrics:**

- ✓ Secretion clearance techniques
- ✓ Humidity and humidifier
- ✓ Aerosol therapy

UNIT -4**9hrs****Airway management:**

- ✓ Artificial airway management
- ✓ Capillary blood gas analysis
- ✓ Atrial blood gas analysis
- ✓ Oxygen therapy

UNIT -5**9hrs****Concepts of mechanical ventilation in neonates:**

Goals of mechanical ventilation, indications of mechanical ventilation, modes of ventilation, Strategies of ventilation weaning from ventilation.

Total Hrs: 45hrs**Course Outcomes:**

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

1. Adhere knowledge of congenital Acyanotic heart diseases
2. Able to recognize modules of diseases in paediatric's patients
3. Able to provide airway clearance techniques in neonates and paediatrics
4. Identify and provide airway management in neonates and paediatrics.
5. Able to provide mechanical ventilation in neonates and paediatrics

Text Book:

- Cloherty and Stark's Manual of Neonatal Care – Eric C. Eichenwald, Anne R. Hansen, Camilia R. Martin, Ann R. Stark.

Reference Books:

- Neonatal ICU protocols – Neelam Kler, Pankaj Garg, Anup Thakur.
- AIIMS Protocols in Neonatology Core Protocols by Ramesh Agarwal, Ashok Deorari, Vinod K Paul, M Jeeva Sankar, Anu Sachdeva. (Volume-1,2).

Mechanical Ventilation – II

RTTT3602 c

L T P C
3 0 0 3

Course Description: This course typically involves teaching students about the advance modes of ventilation, weaning and extubation from mechanical ventilation, ventilator graphics and its trouble shooting. It includes principles behind these instruments, their components, calibration, safety protocols and techniques to ensure optimal patient care and equipment usage in its advanced version

Course Objective:

At the end of the course, students should be able

1. To understand the advance modes of mechanical ventilation
2. To understand the weaning indices, criteria, extubation protocol
3. To understand the Initiation of mechanical ventilation in specific disease condition
4. To understand the mechanical ventilation in special situations like ECMO
5. To understand how to transport a mechanically ventilated and critically ill patients

UNIT-1

9 hrs

VENTILATOR GRAPHICS

Scalars and loops , Types of waveforms, ventilator asynchrony, trouble shooting and therapeutic strategies

ADVANCED MODES OF MECHANICAL VENTILATION - Classification

Hybrid modes of ventilation-

1. volume assured pressure support [VAPS]
2. pressure regulated volume control [PRVC]
3. Adaptive Support Ventilation [ASV]
4. Bi -level ventilation
5. Mandatory Minute Ventilation [MMV]
6. Neurally Adjusted Ventilatory Assist [NAVA]

Spontaneous modes of ventilation

7. Volume support[VS]
8. Propotional assist ventilation[PAV]

UNIT-2

9 hrs

WEANING FROM MECHANICAL VENTILATION

Definition of weaning success and failure, patient condition prior to weaning criteria, weaning procedure, weaning protocol, terminal weaning , Extubation

UNIT-3

9 hrs

MECHANICAL VENTILATION IN SPECIFIC DISEASE CONDITIONS

1. Obstructive lung disease- COPD, ASTHMA
2. Restrictive lung disease- ARDS, ILD
3. Traumatic Brain Injury
4. Lung cancer [ONE LUNG VENTILATION]

UNIT-4

9 hrs

MECHANICAL VENTILATION IN NON-TRADITIONAL SETTINGS

Mechanical ventilation at home, mechanical ventilation in hyperbaric condition, mechanical ventilation in mass casualty incidents, traveling with portable ventilators.

UNIT-5

9 hrs

Extracorporeal Membrane Oxygenation [ECMO] - Indications , Contraindications , Circuits , VA Ecmo , VV Ecmo , Complications. Transport of Mechanically Ventilated Patients

Total Hrs: 45 hrs

COURSE OUTCOMES:

By the end of this course, students will be able to

1. Switch over and operate and titrate the advance modes of mechanical ventilation
2. Choose an appropriate mode and settings for appropriate disease condition
3. Trouble shoot the ventilator graphics and their therapeutic strategies
4. Care and transport of mechanically ventilated patients
5. Wean and extubate mechanically ventilated patients

TEXT BOOK-

- Clinical application of mechanical ventilation 4th edition by DAVID CHANG

REFERENCE BOOKS

- Pilbeam's mechanical ventilation 7th edition by J.M. CARIO
- EGAN'S Fundamentals of respiratory 12th edition by ROBERT .M.KACMAREK, JAMES K.STOLLER

VII & VIII SEMESTER SYLLABUS

Internship Guidelines

Effective from 2021 Admitted Batch

Sl. no	CONTENTS
1	Description
2	Objectives
3	General guidelines
4	Guidelines for completion, leave & repetition
5	Time distribution
6	Competencies to be acquired during the internship
7	Assessment Plan

DESCRIPTION

The internship for BSc Allied Health Science spans one year, providing students with extensive practical training across key departments of various Hospitals. This hands-on experience aims to develop confidence, proficiency, and advanced skills necessary for a career in Allied Health Sciences.

OBJECTIVES

- **Skill Development:** Develop competence in beginning and intermediate clinical skills procedures relevant to respective departments.
- **Observational Learning:** Observe and understand advanced and specialized procedures in hospital settings.
- **Clinical Practice:** Apply theoretical knowledge gained in classrooms to practical settings, demonstrating proficiency in conducting invasive and noninvasive techniques.
- **Logbook Maintenance:** Maintain a detailed work logbook endorsed by supervisors or trainers, documenting daily activities and achievements during the internship.

GENERAL GUIDELINES

1. Every candidate, after passing the final semester exams (should not have any back papers), is required to undergo a compulsory rotatory internship for a period of 12 months (365 calendar days) to be eligible for the award of the degree.
2. Internship is in partial fulfilment of the requirements of the course, and no candidate shall be declared to have completed the course otherwise.
3. All parts of the internship shall be done in the teaching hospital under a National Medical Commission (NMC)/National Accreditation Board for Hospital and Healthcare Providers (NABH).
4. The interns should conduct themselves in a manner befitting the profession and should dress appropriately in their respective work areas.
5. Interns should complete postings in all specialties as decided by the department.
6. Students are eligible to commence internship from next month of completion of their end semester examination (6th semester).
7. Each intern should maintain a logbook wherever he/she is posted. The intern has to get a signature from the supervising staff at the end of each posting.
8. Project work/ duties during the internship must be duly undertaken and performed.
9. A review meeting to assess the progress of the project and logbook will be conducted on the first Saturday of every third month. A detailed report on the progress must be submitted following each meeting.
10. The intern is allowed to take his internship from other than the parent institution, provided there is a NOC obtained from both the parent institution and the institution offering the internship. Dean has to permit the student for internship after verifying the NOC.

GUIDELINES FOR COMPLETION, LEAVE & REPETITION COMPLETION

The internship shall be completed within months of passing the final semester examination whenever in force but not limited to.

LEAVE

- Normal Leave: Intern shall be permitted a maximum of 12 days leave with prior permission during the entire period of internship.
- The entire period of 12 days cannot be availed during any one-week / two-week postings applicable to a single department.
- Medical Leave: Medical leave shall be included within the 12 days of normal leave. Any medical leave beyond this period shall be recommended only by a duly constituted committee at the college level, which consists of the Dean, HOD, Supervisor and medical practitioner. The internship shall be extended if the leave of absence extends beyond this period.

Department	Role of RTT Internees
OP / IP	Able to perform Cylinders Safety Systems, Regulators, Flowmeters, Oxygen Therapy, Humidity/Aerosol Therapy
OP/IP	Able to perform Chest Physical Assessment, Bronchial Hygiene Therapy, Medicated Aerosol Therapy, Hyperinflation Therapy
INPATIENT HOSPITAL	Developing skills for Rounds and Charting, Isolation Technique and other procedures performed in general wards (CPAP , BIPAP , Incentive spirometry , 6mwt , ICD ,thoracocentesis , pleurodesis etc)
Specialty Rotation GENERAL ICU / CRITICAL CARE ICU / NEURO ICU / CARDIAC ICU	To learn clinical experiences will involve patients who receive intermittent and intensive respiratory care modalities and diagnostic procedures.
Specialty Rotations GENERAL ICU / CRITICAL CARE ICU / NEURO ICU / CARDIAC ICU	Able to Sampling arterial and mixed venous blood, arterial line insertion, blood gas analysis and interpretation
Specialty Rotations GENERAL ICU / CRITICAL CARE ICU / NEURO ICU / CARDIAC ICU	Developing skills to initiate ventilators, monitoring, and management of ill patients.
Specialty Rotations GENERAL ICU / CRITICAL CARE ICU /	Able to establish the Artificial airway care, suctioning, intubation and artificial airway management.

NEURO ICU / CARDIAC ICU	
Specialty Rotations GENERAL ICU / CRITICAL CARE ICU	Able to perform other procedures performed in intensive care units.
Specialty Rotations NEONATAL ICU	Develop skills for Neonatal and Paediatric module covers respiratory care modalities and diagnostic procedures: the normal birth and assessment of the newborn.
Specialty Rotations NEONATAL ICU	Anticipating the high-risk infant, stabilization of the high-risk infant, evaluation of the high-risk infant, diseases that cause respiratory distress.
Specialty Rotations NEONATAL ICU	Developing skills for Respiratory care techniques and management in neonatal intensive care units.
Specialty Rotations NEONATAL ICU	Able to perform infant transport and other procedures performed in Neonatal and Paediatric intensive care units.
Diagnostic Labs	To assist and perform the following: Valid and reliable PFT for lung volumes and capacities, flow rate and diffusion studies and body plethysmography.
Diagnostic Labs	Interpret graphical presentation of volume-time curve, flow-volume loop, MVV, DLCO and other tracings as well as numerical results and other procedures performed in PFT lab

Diagnostic Labs	Should be able to assist and/or perform the Preparation of patient prior and post to bronchoscopy/ thoracoscopy procedure, preparation of equipment, drugs, and other adjunct devices for use in bronchoscopy/thoracoscopy.
Diagnostic Labs	Exposure to polysomnography (sleep studies) and understanding how sleep disorders affect respiratory function.

COMPETENCIES TO BE ACQUIRED DURING INTERNSHIP

1. Patient Assessment and Evaluation Competency

- Skill Development:
 - Patient History and Assessment: Conduct comprehensive patient assessments, including reviewing medical history, vital signs, and respiratory status.
 - Respiratory Function Tests: Perform and interpret basic pulmonary function tests (PFTs) to assess lung volume, capacity, and flow rates.
 - Clinical Decision-Making: Develop the ability to assess symptoms and identify the need for immediate intervention.
- Outcome: Interns should be able to evaluate respiratory conditions, identify care priorities, and collaborate with the healthcare team to make informed care decisions.

2. Airway Management Competency

- Skill Development:
 - Airway Clearance Techniques: Learn chest physiotherapy, suctioning, and secretion management techniques.
 - Intubation Support and Extubation: Assist in endotracheal intubation procedures, tracheostomy care, and monitor patients post-extubation.
 - Emergency Airway Procedures: Gain experience with emergency protocols for airway obstruction and rapid response situations.
- Outcome: Interns should demonstrate effective airway management skills, supporting both routine and emergency patient needs.

3. Respiratory Therapeutic Procedures Competency

- **Skill Development:**
 - **Oxygen Therapy Administration:** Deliver oxygen therapy through various devices (e.g., nasal cannulas, masks) and monitor patient response.
 - **Medication Delivery:** Administer aerosolized medications, such as bronchodilators and corticosteroids, through nebulizers or inhalers.
 - **Non-Invasive Ventilation (NIV):** Use CPAP and BiPAP devices to manage patients with conditions like sleep apnea or respiratory failure.
- **Outcome:** Interns should competently perform and adjust respiratory therapies, ensuring treatments align with prescribed patient care plans.

4. Mechanical Ventilation Competency

- **Skill Development:**
 - **Ventilator Setup and Adjustment:** Set up and operate mechanical ventilators, adjust settings based on physician orders, and monitor patient ventilatory status.
 - **Ventilator Weaning:** Understand protocols for gradually reducing ventilator support to facilitate extubation.
 - **Troubleshooting Alarms and Issues:** Identify and respond to ventilator alarms and perform basic troubleshooting.
- **Outcome:** Interns should understand ventilation strategies, apply proper settings, and safely manage patients on ventilators in both routine and acute scenarios.

5. Diagnostic and Monitoring Competency

- **Skill Development:**
 - **Arterial Blood Gas (ABG) Analysis:** Draw and interpret ABG samples, understanding pH balance, oxygenation, and carbon dioxide levels.
 - **Pulse Oximetry and Capnography:** Use pulse oximeters to monitor oxygen saturation and capnography for assessing ventilation.
 - **Pulmonary Diagnostics:** Assist in performing more advanced pulmonary function tests and analyzing the results.
- **Outcome:** Interns should demonstrate competence in monitoring respiratory function, understanding diagnostic values, and incorporating findings into patient care planning.

6. Infection Control and Equipment Management Competency

- **Skill Development:**
 - **Equipment Sterilization:** Clean, disinfect, and sterilize respiratory equipment to prevent infections.

- Infection Control Protocols: Follow all hospital and department protocols for infection control, including hand hygiene, PPE use, and isolation procedures.
- Safe Equipment Handling: Properly store, transport, and maintain respiratory therapy equipment.
- Outcome: Interns should understand and follow infection control protocols, ensuring a safe clinical environment for patients and staff.

7. Patient and Family Education Competency

- Skill Development:
 - Education on Respiratory Health: Explain respiratory conditions, treatments, and techniques for improving respiratory health.
 - Home Equipment Education: Teach patients and families how to use home respiratory equipment safely, such as oxygen concentrators or inhalers.
 - Lifestyle Advice: Educate on Pulmonary Rehabilitation (smoking cessation, exercise, and other lifestyle modifications) to support respiratory wellness
- Outcome: Interns should be able to communicate effectively with patients and families, providing clear instructions and emotional support to encourage adherence to care plans.

8. Professionalism and Ethical Competency

- Skill Development:
 - Confidentiality and Patient Rights: Respect patient privacy, follow HIPAA guidelines, and understand the importance of informed consent.
 - Understanding of professional conduct, ethics, and legal issues in healthcare.
 - Commitment to continuing education and professional development.
 - Team Collaboration: Work effectively within interdisciplinary teams, respecting roles and collaborating to optimize patient care.
 - Time Management and Organization: Develop the ability to prioritize tasks and manage multiple patient needs efficiently.
- Outcome: Interns should exhibit professional behavior, uphold ethical standards, and contribute positively to the healthcare team.

ASSESSMENT PLAN

A Student wants to complete the project work in addition to an Internship.

Course Code : RTTI4501

Course Name : Internship-I

S. No.	Component of Assessment	Marks Allotted	Type of Assessment	Scheme of Evaluation
1	Internship	80	Continuous Evaluation	<ul style="list-style-type: none">• Twenty (20) marks for review assessment.• Each review assessment will carry 20 marks.• A total of three review assessment will be held over 12 months, scheduled on the first Saturday of every third month.• The 20 marks for each review assessment will be distributed as follows: 5 marks for the logbook, 5 marks for the report, 5 marks for the presentation, and 5 marks for the viva.• 20 Marks for final Internship report submission.
2	Final Assessment	20	End Assessment	Twenty (20) marks <ul style="list-style-type: none">• Final Presentation (10marks)• Viva-voce (10 marks)
	Total	100		

Course Code : RTTI4502

Course Name : Internship-II

S. No.	Component of Assessment	Marks Allotted	Type of Assessment	Scheme of Evaluation
1	Internship	80	Continuous Evaluation	<ul style="list-style-type: none">• Twenty (20) marks for review assessment.• Each review assessment will carry 20 marks.• A total of three review assessment will be held over 12 months, scheduled on the first Saturday of every third month.• The 20 marks for each review assessment will be distributed as follows: 5 marks for the logbook, 5 marks for the report, 5 marks for the presentation, and 5 marks for the viva.• 20 Marks for final Internship report submission.
2	Final Assessment	20	End Assessment	Twenty (20) marks <ul style="list-style-type: none">• Final Presentation (10marks)• Viva-voce (10 marks)
	Total	100		

Course Code : RTTP4501

Course Name : Project Work

S. No.	Component of Assessment	Marks Allotted	Type of Assessment	Scheme of Evaluation
1	Project Work	80	Continuous Evaluation	Continuous Assessment -80mark Project Planning and Proposal approval - 20 mark Project Execution - 20 mark Log Book- 20 mark Project Report - 20 mark
2	Project Work/Dissertation	20	Final Assessment	Twenty (20) marks <ul style="list-style-type: none">• Final Presentation (10marks)• Viva-voce (10 marks)
	Total	100		

SEMESTER VII INTERNSHIP

Course Outcome:

1. To become a competent Allied Health science professional Engaged in Patient care
2. To learn the routine functioning of the health care system
3. To gain practical and clinical skills
4. To learn various difficulties in the field through valuable experience
5. To explore the broad field opportunities and engage in Specialization

SEMESTER VIII INTERNSHIP & PROJECT WORK

Course Outcome:

1. To conduct High quality Scientific research
2. Ability to apply the excellent theoretical knowledge gained in the Academic career
3. Pursue academic excellence through relevant research
4. To identify existing research gaps
5. Ability to engage in furtherance of the medical field.

