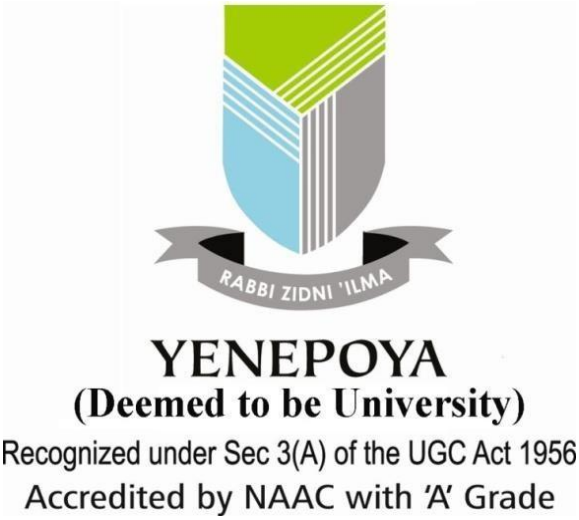

FACULTY OF ALLIED AND HEALTHCARE PROFESSIONS

YENEPOYA (DEEMED TO BE) UNIVERSITY

Deralakatte, Mangaluru –575018

BACHELOR OF PHYSIOTHERAPY (4½ YEARS)

Choice Based Credit System

Regulations

INDEX

1. Preamble:

The Chairman, University Grants Commission (UGC) has in his letter D.O.No.F.1-1/2015 (CM) dated 8th January, 2015 has communicated the decision of the Ministry of Human Resources to all Universities in the country to implement the Choice Based Credit System (CBCS)in both under graduate and post graduate programs to enhance academic standards and quality in higher education through innovation and improvements in curriculum, teaching-learning process and examination and evaluation systems. Choice Based Credit System is a flexible system of learning. It enables the students choose electives from a wide range of elective courses offered by the other University Departments, adopt an inter-disciplinary and intra-disciplinary approach in learning, make best use of the available expertise of the faculty across the departments or disciplines and has an inbuilt evaluation system to assess the analytical and creativity skills of students in addition to the conventional domain knowledge assessment pattern. The distinguishing features of CBCS are the following:

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

Semester System and Choice Based Credit System:

The semester system accelerates the teaching-learning process. The credit-based semester system provides flexibility in designing curriculum and assigning credits based on the course

content and hours of teaching. The choice-based credit system provides a cafeteria 'type approach in which the students can take courses of their choice, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning

2. Short Title and Commencement:

These Regulations shall be called as **Yenepoya (Deemed to be University), Regulations Governing the Choice Based Credit System (CBCS) for the UG Programmes 2021.**These regulations shall come into force from the Academic year 2021-22 batch and onwards.

3. Definitions of Key Words:

Academic year:

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

- **Choice Based Credit System**: The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).

- **Course:** Usually referred to, as 'papers" is a component of a programme. The courses shall define learning objectives and learning outcomes. A course shall comprise lectures/ tutorials/ laboratory work/ field work/ outreach activities/project work/vocational training/viva/seminars/term papers/assignments/presentations/ self-study etc. or a combination of some of these.

- **Credits:** Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/tutorial laboratory work and other forms of learning required, to complete the course contents in a minimum of 15week schedule.

	Lecture - L	Tutorial - T	Practical - P	Clinical Training/Rotation CT/CR.
1 Credit	1 Hour	1 Hour	2 Hours	3-5 Hours

One credit=1 hour of lecture / 1 hour of tutorial per week, two hours of Laboratory or practical training and three hours of clinical posting/ field work practice. All courses need not carry the same credits.

- **Programme:** An educational programme leading to award of a degree, diploma or **certificate**.
- **Grade Point**: It is a numerical weight allotted to each letter grade on a 10-point scale.
- **Credit Point**: It is the product of grade point and number of credits for a course.
- **Cumulative Grade Point Average (CGPA**): It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.
- **Letter Grade:**It is an Index of the performance of students in a set course. Grades are denoted by letters: **O, A+, A, B+, B, C , P, F, AB.**
- **Semester Grade Point Average (SGPA):** It is a measure of performance of work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.
- **Transcript or Grade Card or Certificate:** Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (code, title, number of credits, grade secured) along with SGPA of that semester.

4. Duration of the programme:

The duration of the Under-graduate Physiotherapy programme shall extend over 8 Semesters (four academic years with 6 months internship).Each semester comprising minimum of 15weeks or more with a minimum of 90 actual working days of instruction in each semester. The successful completion of the under-graduate programme would lead to Bachelor's Degrees in their respective specialty.

5. Semesters:

An academic year shall consist of two semesters;

Odd Semester 1st,3rd ,5th& 7th	July/August to December/January
Even semester 2nd, 4th,6th&8th	January/February to June/July

6. Programme: Bachelor of Physiotherapy

Duration: 4 years + 06 Months Internship

7. Type of Courses:

Courses in a programme may be of three kinds:

7.1. Core Course

7.2. Ability Enhancement Compulsory Course (Foundation course)

7.3. Elective Course

7.1. Core Course: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course. This is the course which is to be compulsorily studied by a student as a core requirement to complete the program of study in a said discipline.

7.2. Ability Enhancement Compulsory Courses (AECC): Ability enhancement compulsory courses (AECC) are the courses based upon the content that leads to knowledge enhancement.

Example:

- Environmental science
- English/ MIL communication
- These are mandatory for all disciplines.

7.3 Elective Course (EC):

7.3.1. Generic elective

7.3.2. Skill enhancement course

7.3.3. Self-learning courses (SWAYAM/MOOC)

7.3.4. Discipline Specific Elective courses (DSE)

7.3.1 **Generic elective:** An Elective Course chosen from pool of courses which are unrelated from unrelated discipline/subject with intention to seek exposure beyond disciplines of choice. The purpose of this is to offer the students the option to explore disciplines of interest beyond the choices they make in core and discipline specific elective courses.

7.3.2: **Skill enhancement course:** SEC courses are value-based and/or skill- based and are aimed at providing hands-on-training, competencies and skills. These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.

7.3.3: **Self – learning course:** With respect to- UGC (Credit Framework for Online Learning Courses through SWAYAM) Regulation, 2021. New Delhi, the 25th March, 2021. Vide No.F.1-100/2016 (MOOCs/e-content)

The List of MOOCS (Massive open online courses) and SWAYAM (Study webs of active learning for young aspiring minds)will be finalized by the faculty of allied health professions as per subject to time-to-time UGC notification and will be submitted to the academic council of the DU. Yenepoya (Deemed to be university) shall adopt the regulation of UGC governing MOOCS/ SWAYAM courses as amended from time to time.

The college/ department will designate course coordinator/facilitator to guide the students throughout the course to facilitate the completion of the chosen course.

7.3.3.1 Evaluation and Certification of MOOCs:

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

The Yenepoya (Deemed to be) University incorporate the marks/grade obtained by the student, as communicated by the Host Institution through the PI of the SWAYAM course in the marks sheet of the student that counts for final award of the degree by the University.

Credit Mobility of MOOCs: The Yenepoya (Deemed to be) University will give the equivalent credit weightage to the students for the credits earned through online learning courses through SWAYAM platform in the credit plan of the program.

In case a student fails to complete the MOOCS course He/ She may be allowed to complete the course requirements by registering for another course online in subsequent semester or opt for a course offered at this Yenepoya (Deemed to be) University.

7.3.4 **Discipline Specific Elective courses** (DSE): The courses are offered during 7th& 8th Semester with the intention to advance the learner's knowledge in an elective area of interest.

8. Assigning Credit Hours per course:

While there is flexibility for the departments in allocation of credits to various courses offered, the general formula shall be:

- Every Core course shall be restricted to a maximum of 4credits.
- The elective course offered by the Yenepoya (Deemed to be) University shall be restricted to a maximum of **2 credits**.
- A candidate **shall compulsorily complete** total **Twelve Credits of Elective courses**
- These courses shall be selected either from the Generic Electives, Skill enhancement courses offered by Yenepoya (Deemed to be) university or from the **SWAYAM/MOOC/NPTEL** courses notified by the UGC time to time and enlisted by the faculty of Allied Health Care Professions. A Candidate shall have freedom to choose the courses of once own choice and at their own pace from the external online platform (SWAYAM/MOOC) or a mix of courses offered by Yenepoya (Deemed to be) University but, require to complete before appearing the Sixth semester end examination.
- A candidate who is desirous to add more credits shall be permitted to do so during the academic duration. Extra credits earned by a candidate shall be included in the marks card on submission of course completion certificate. However, it shall not be considered for awarding the Grade in the UG programme.
- The credit assigned to the course is indicated as **L: T: P** format. For example, for a 4-credit course format could be: 4:0:0 or 1:2:1 or 3:1:0 or 0:0:4etc.

9. Assigning Total Credits for a Programme:

The UGC, in its notification No.F.1-1/2015 **(Sec.)** dated 10/4/15 has provided a set of "Model curricula and syllabi for CBCS programmes. In conformation with this notification, at Yenepoya (Deemed to be University), for UG programs with duration of 3years study period or 6 semesters, the total credits shall be a maximum of 140 credits and for the UG programme with duration of 4 years study period or 8 semesters, the total credits shall be maximum of 190 credits.

9.1. Structure of Syllabus: To ensure uniformity in assigning the credits to a course, a structured and unitized syllabus shall be observed. For UG Programs, each course shall have a structured syllabus in the following format:

Syllabus Content

- Title of the Course-Credits & Total hours
- Learning Objectives
- Units for contents
- Learning Outcomes
- References - Text Books, Journals and Web Resources

10. CBCS Programmes Coding System:

The coding system shall be in consonance with the system followed by the Office of the Controller of Examinations. Presently the following coding pattern is followed.

First two letters describe the faculty name, followed by level of programme (UG-01; PG-02) and two letters represent the programme.

Course code shall have prefix denoting semester number followed by an alphabet of respective type of courses such as **C** = Core, **AECC**= Ability Enhancement Compulsory, **GE**=Generic Elective, **SE**= Skill Enhancement, **SL** = Self -Learning, **P**=Practical,**R**-research project, **CT**= Clinical training followed by numbers denoting number of courses taught-

1st SEM: 1C1, 1C2, 1C3, 1AECC1, 1AECC2, GE1/SE1/SL1 1P1 etc.

2nd SEM: 2C1, 2C2, 2AECC1, A2ECC2, GE2/SE2/SL2, 2P1,etc.

3rd SEM: 3C1, 3C2, 3AECC1, 3AECC2, GE3/SE3/SL3, 3P1, 3P2etc.

4th SEM: 4C1, 4C2, 4C3, 4P1,4P2 ,4CT1, GE4/SE4/SL4etc.

5th SEM: 5C1, 5C2, 5GE1/5SE1, 5P1, 5P2, 5P3,5CT1,GE5/SE5/SL5etc.

6th SEM:6C1, 6C2, 6GE1/6SE1, 6P1, 6P2, 6P,6CT1 , GE6/SE6/SL6etc.

7th SEM:7C1, 7C2, 7GE1, 7P1, 7P2, 7P3, 7CT1,DSE1 , DSE2 etc.

8th SEM:8C1, 8C2, 8GE1, 8P1, 8P2 , 8P3,8CT1,DSE1 DSE2, 8R1 etc.

11. Attendance:

- Each course (theory, practical, clinical etc.) shall be treated as an independent unit for the purpose of attendance. Candidates having minimum **80%** attendance in each of the Courses can only qualify to appear for the Semester End Examination. The Candidates with less than 80% of attendance shall be required to repeat that Course by attending the semester.
- There shall be no provision for condonation of shortage of attendance.
- For **SWAYAM/MOOC/NPTEL** it shall be as per the regulations governing the courses of implementing authority.

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

12. Scheme of Examination and Assessment of a course:

- Evaluation of a course shall be done based on continuous internal assessment (CIA) mode followed by semester end university examination (SEE) for each course.
- The components of CIA (Continuous Internal Assessment) may include sessional tests, Seminar, Assignment /Social involvement and other activities as determined by the respective specialty.
- The marks for **CIA shall be 40%** and **SEE shall be 60%.**
- There shall be **no minimum marks for CIA** for a pass, but the **minimum marks for SEE+CIA shall be 40% in aggregate for pass per course.**
- There shall be examinations at the end of each semester ordinarily during December/January for odd semesters and during June/July for even semesters
- The SEE duration shall be two and half hours.
- The question paper pattern shall be decided by the Board of Studies (BOS) of the respective College/Departments.

Evaluation of Answer scripts:

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

13. Classification of Successful candidates:

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

Letter Grades and Grade Points:

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

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

Table 1: Grades and Grade Points

Letter Grade	Grade Point
O (Outstanding)	10
A+(Excellent)	9
A (Very Good)	8
B+ (Good)	7
B (Above Average)	6
C (Average)	5
P (Pass)	4
F (Fail)/ RA (Reappear)	0
Ab (Absent)	0
Not Eligible (NC): detained	0

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

The Semester Grade Point Average (SGPA):

- The performance of a student in a semester is indicated by a number called 'Semester Grade Point Average' (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses by the student during the semester
- For example, if a student takes five (Theory/Practical) in a semester with credits C1, C2, C3, C4 and C5 and the student's grade points in these courses are G1, G2, G3, G4 and G5, respectively, and then students' SGPA is equal to:

$$SGPA = \frac{C1G1 + C2G2 + C3G3 + C4G4 + C5G5}{C1 + C2 + C3 + C4 + C5}$$

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

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

13.3 Cumulative Grade Point Average (CGPA):

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

$$C1S1+C2S2+C3S3+C4S4+C5S5+C6S6$$

$$CGPA = \frac{C1+C2+C3+C4+C5+C6}{}$$

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

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

Program Code	Course	Credits (a)	Grade Obtained	Credit Value (b)	Grade Points (a x b)
	Course 1	4	B	8	32
	Course 2	3	B	8	24
	Course 3	4	O	10	40
	Course 4	2	C	7	14
	Course 5	4	A	9	36
	Course 6	2	B	8	16
	Course 7	2	B	8	16
	Total	21	-	-	178

1st Semester GPA = Total Grade Points / Total Credits = 178/ 21= 8.47 2nd Semester GPA = 8 with respect to 23 Credits

Then 1st Year CGPA = (8.47 x 21) + (8 x 23) / 21 + 23 = 8.21

14. Declaration of class

1. The class shall be awarded on the basis of Cumulative marks scored in all the Courses
2. First Class with Distinction= Aggregate Marks 75% and above
3. First Class = Aggregate Marks 60 to 74.9%

4. Second Class= Aggregate Marks 50 to 59.9%

14.1. Promotion Criteria

- Students are allowed to carry over any number of courses till eighth semester. But student is eligible to appear for the End semester exam of eighth semester if he/she has cleared all the Courses both Core and AECC of first, second, third, fourth, fifth& sixth semesters.
- If student has any pending course of first to sixth semesters, he/she is not eligible to appear for the end semester exam of the eighth semester. However, seventh semester courses are allowed to club with eighth semester end examination. But, all the Core courses and AECC Courses of first to sixth semester should be completed to be eligible for 8th end semester exam.
- Candidate should also complete 12 credits of elective course to be eligible for the 8^{th} End Semester Examination.
- Candidate should clear all Courses (Core, AECC & Elective courses) of all the semester, to be eligible to start the Six months of mandatory internship.
- A failure in any one Course will mean the student has to reappear for the exam in that Course only.
- A candidate who passes the semester examinations in parts is eligible for only CGPA and letter grade but not for Class/ ranking/award/medal from the University.

15. **Internship:** A Compulsory rotatory internship for a period of 6 months is mandatory. The internship time period provides the students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery.

16. **Eligibility for the award of Degree:** A candidate shall have passed in all the Courses of all eight semesters and should have successfully completed the six months of mandatory internship.

17. **Maximum Period for Completion of Program**:

A candidate shall complete the bachelor of Physiotherapy Program within **9** years from date of admission.

18. Minimum for a pass:

- A candidate shall be declared to have passed the UG program if he/she secures at least a CGPA of 4.0 (Course Alpha-Sign Grade P) in the aggregate of both internal assessment and semester end examination marks.
- The candidates who pass all the semester examinations in the first attempts in Four years are eligible for ranks provided they secure at least a CGPA of 8.0 (at least Alpha-Sign Grade A).
- The results of the candidates who have passed the 8thsemester examination but not passed the lower semester examinations shall be declared as NCL (Not Completed Lower semester examinations). Such candidates shall be eligible for the degree only after completion of all the lower semester examinations.
- A candidate who passes the semester examinations in parts is eligible for only CGPA and Alpha-Sign Grade but not for ranking.
- There shall be no minimum in respect of internal assessment and Viva-Voce marks.

19. Re-Entry after Break of the study:

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

20. Model Programme Structure:

Semester wise Course & Credit Distribution

SEMESTER-I (1-6 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	Human Anatomy - IA	40	60	100	3	1	-	4
2	Core	Human Anatomy-IB	40	60	100	-	-	6	3
3	Core	Human Physiology-IA	40	60	100	3	1	-	4
4	Core	Human Physiology-IB	40	60	100	-	-	4	2
5	Core	General &Clinical Psychology	20	30	50	2	-	-	4
		Sociology	20	30	50	2	-	-	
6	AECC	English & Communication	20	30	50	2	-	-	2
7	AECC	Constitution of India	20	30	50	2	-	-	2
Total					**600**				**21**

SEMESTER-II (7 -12 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	Human Anatomy-IIA	40	60	100	3	1	-	4
2	Core	Human Anatomy-IIB	40	60	100	-	-	6	3
3	Core	Human Physiology-II	40	60	100	2	1	-	3
4	Core	Biochemistry	40	60	100	3	-	-	3
5	Core	Basics Principles of Biomechanics	40	60	100	2	1	-	3
6	Core	Exercise Therapy-IA (Foundation Concepts)	40	60	100	2	1	-	3
7	Core	Exercise Therapy-IB (Foundation Concepts)	40	60	100	-	-	6	3
8	AECC	Kannada	20	30	50	2	-	-	2
Total					**750**				**24**

SEMESTER-III (13-18 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	**Part-A:** Pathology	20	30	50	2	-	-	4
		Part B: Microbiology	20	30	50	2	-	-	
2	Core	Biomechanics &Kinesiology-A	40	60	100	3	1	-	4
3	Core	Biomechanics & Kinesiology-B	40	60	100	-	-	4	2
4	Core	Exercise Therapy-IIA	40	60	100	3	1	-	4
5	Core	Exercise Therapy-IIB	40	60	100	-	-	6	3
6	AECC	Medical/ Physiotherapy Law & Ethics	40	60	100	2	-	-	2
7	AECC	Human rights and Gender Equity	20	30	50	2	-	-	2
Total					**650**				**21**

SEMESTER-IV (19-24 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	**Part-A:** Research Methodology	20	30	50	2	-	-	4
		Part-B: Biostatistics	20	30	50	2	-	-	
2	Core	Pharmacology	40	60	100	3	-	-	3
3	Core	Electrotherapy - IA (Including Bio Physics & equipment care)	40	60	100	2	1	-	3
4	Core	Electrotherapy - IB (Including Bio Physics & equipment care)	40	60	100	-	-	6	3
5	Core	Electrotherapy - IIA	40	60	100	2	1	-	3
6	Core	Electrotherapy - IIB	40	60	100	-	-	4	2
7	SEC	Clinical Training-I	20	30	50	-	-	6	2
8	AECC	Environmental Studies	20	30	50	2	-	-	2
Total					**700**				**22**

SEMESTER-V (25-30 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	Musculoskeletal Conditions for Physiotherapists	40	60	100	4	-	-	4
2	Core	General Medical &Paediatric Conditions for Physiotherapists	40	60	100	4	-	-	4
3	Core	Surgical Conditions for Physiotherapists	40	60	100	4	-	-	4
4	Core	Clinical Neurology for Physiotherapists	40	60	100	3	-	-	3
5	Core	Cardiovascular & Pulmonary Conditions for Physiotherapists	40	60	100	3	-	-	3
6	SEC	Clinical Training-II	20	30	50	-	-	9	3
Total					**550**				**21**

SEMESTER-VI (31-36 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	Community Medicine	40	60	100	4	-	-	4
2	Core	Evidence Based Practice & Clinical Reasoning	40	60	100	2	-	-	2
3	Core	Physiotherapy in Musculoskeletal Conditions - IA	40	60	100	3	-	-	3
4	Core	Physiotherapy in Cardiopulmonary Conditions & Intensive Care - A	40	60	100	4	-	-	4
5	Core	Physiotherapy in Musculoskeletal Conditions - IB	40	60	100	-	-	4	2
6	Core	Physiotherapy in Cardiopulmonary Conditions & Intensive Care - B	40	60	100	-	-	6	3
7	SEC	Clinical Training-III	20	30	50	-	-	9	3
Total					**650**				**21**

SEMESTER-VII (37-42 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	Neuro Physiotherapy - A	40	60	100	4	-	-	4
2	Core	Physiotherapy in Musculoskeletal Conditions - IIA	40	60	100	3	-	-	3
3	Core	Physiotherapy in General Surgical Conditions & Women's Health /OBG-A	40	60	100	3	-	-	3
4	Core	Neuro Physiotherapy - B	40	60	100	-	-	6	3
5	Core	Physiotherapy in Musculoskeletal Conditions - IIB	40	60	100	-	-	4	2
6	Core	Physiotherapy in General Surgical Conditions & Women's Health/ OBG - B	40	60	100	-	-	4	2
7	SEC	Clinical Training-IV	20	30	50	-	-	6	2
Total					**650**				**19**

SEMESTER-VIII (43-48 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week				Credits
			IA	SEE		L	T	P	R	
1	Core	Community & Preventive Physiotherapy - A	40	60	100	2	1	-	-	3
2	Core	Health Promotion, Fitness & Wellness	40	60	100	2	-	2	-	3
3	Core	Administration & Teaching Skills	40	60	100	2	-	-	-	2
4	Core	Community & Preventive Physiotherapy - B	40	60	100	-	-	4	-	2
5	Core	Research Project	40	60	100	-	-	-	8	4
6	SEC	Clinical Training-V	20	30	50	-	-	9	-	3
Total					550					17
Total Credits										**166**
Elective Credits (Generic)										**12**
Elective Credits (Discipline Specific)										**06**

Internship Credits	**18**
Total Credits of the Program	**202**

LIST OF DISCIPLINE SPECIFIC ELECTIVE COURSES:

Sl. No	Course Name	Credits
1	Sports Physiotherapy	3
2	Vestibular Rehabilitation	3
3	Physiotherapy in Critical Care	3
4	Physiotherapy in Geriatrics	3
5	Physiotherapy in Palliative Care	3

All the Discipline specific electives will be offered during 7^{th}&8^{th} Semester. Each course will have a maximum of 3 credits. Students shall choose one course per semester. It is mandatory for a student to acquire 6 credits. Number of students per each course is limited to 30 per semester. Pre requisite to join DSE is student should be eligible to appear SEE of 7^{th}/8^{th} Semester as per promotion criteria (Refer-14.1)

SCHEME OF EXAMINATION

SEMESTER-I (1-6 MONTHS)

Sl. No	Category	Course Name	Max Marks					Total Marks
			Theory		Practical			
			IA	SEE	IA	P	Viva	
1	Core	Human Anatomy - IA	40	60				100
2	Core	Human Anatomy-IB	--	--	40	40	20	100
3	Core	Human Physiology-IA	40	60				100
4	Core	Human Physiology-IB	--	--	40	40	20	100
5	Core	**Part A:** General &Clinical Psychology	20	30				50
		Part B: Sociology	20	30	--	--	--	50
6	AECC	English & Communication	20	30	--	--	--	50
7	AECC	Constitution of India	20	30	--	--	--	50
Total			**160**	**240**	**80**	**80**	**40**	**600**

SEMESTER-II (7 -12 MONTHS)

Sl. No	Category	Course Name	Max Marks					Total Marks
			Theory		Practical			
			IA	SEE	IA	P	Viva	
1	Core	Human Anatomy - IIA	40	60	--	--	--	100
2	Core	Human Anatomy-IIB	--	--	40	40	20	100
3	Core	Human Physiology-II	40	60		--	--	100
4	Core	Biochemistry	40	60	--	--	--	100
5	Core	Basics Principles of Biomechanics	40	60		--	--	100
6	Core	Exercise Therapy-IA (Foundation Concepts)	40	60	--	--	--	100
7	Core	Exercise Therapy-IB (Foundation Concepts)	--	--	40	40	20	100
8	AECC	Kannada	20	30	--	--	--	50
Total			**220**	**330**	**80**	**80**	**40**	**750**

SEMESTER-III (13-18 MONTHS)

Sl. No	Category	Course Name	Max Marks					Total Marks
			Theory		Practical			
			IA	SEE	IA	P	Viva	
1	Core	**Part A:** Pathology	20	30				50
		Part B: Microbiology	20	30	--	--	--	50
2	Core	Biomechanics &Kinesiology-A	40	60		--	--	100
3	Core	Biomechanics & Kinesiology-B	--	--	40	40	20	100
4	Core	Exercise Therapy-IIA	40	60		--	--	100
5	Core	Exercise Therapy-IIB	--	--	40	40	20	100
6	AECC	Medical/ Physiotherapy Law & Ethics	20	30	--	--	--	50
7	AECC	Human rights and Gender Equity	20	30	--	--	--	50
Total			**160**	**240**	**80**	**80**	**40**	**600**

SEMESTER-IV (19-24 MONTHS)

Sl. No	Category	Course Name	Max Marks					Total Marks
			Theory		Practical			
			IA	SEE	IA	P	Viva	
1	Core	**Part-A:** Research Methodology	20	30				50
		Part-B: Biostatistics	20	30	--	--	--	50
2	Core	Pharmacology	40	60	--	--	--	100
3	Core	Electrotherapy - IA (Including Bio Physics & equipment care)	40	60				100
4	Core	Electrotherapy - IB (Including Bio Physics & equipment care)	--	--	40	40	20	100
5	Core	Electrotherapy - IIA	40	60				100
6	Core	Electrotherapy - IIB	--	--	40	40	20	100
7	SEC	Clinical Training-I	--	--	20	20	10	50
8	AECC	Environmental Studies	20	30	--	--	--	50
Total			**160**	**240**	**80**	**80**	**40**	**600**

SEMESTER-V (25-30 MONTHS)

Sl. No	Category	Course Name	Max Marks					Total Marks
			Theory		Practical			
			IA	SEE	IA	P	Viva	
1	Core	Musculoskeletal Conditions for Physiotherapists	40	60	--	--	--	100
2	Core	General Medical &Paediatric Conditions for Physiotherapists	40	60	--	--	--	100
3	Core	Surgical Conditions for Physiotherapists	40	60	--	--	--	100
4	Core	Clinical Neurology for Physiotherapists	40	60	--	--	--	100
5	Core	Cardiovascular & Pulmonary Conditions for Physiotherapists	40	60	--	--	--	100
6	SEC	Clinical Training-II	--	--	20	20	10	50
Total			**200**	**300**	**20**	**20**	**10**	**550**

SEMESTER-VI (31-36 MONTHS)

Sl. No	Category	Course Name	Max Marks					Total Marks
			Theory		Practical			
			IA	SEE	IA	P	Viva	
1	Core	Community Medicine	40	60	--	--	--	100
2	Core	Evidence Based Practice & Clinical Reasoning	40	60	--	--	--	100
3	Core	Physiotherapy in Musculoskeletal Conditions - IA	40	60	--	--	--	100
4	Core	Physiotherapy in Cardiopulmonary Conditions & Intensive Care - A	40	60	--	--	--	100
5	Core	Physiotherapy in Musculoskeletal Conditions - IB	--	--	40	40	20	100
6	Core	Physiotherapy in Cardiopulmonary Conditions & Intensive Care – B	--	--	40	40	20	100
7	SEC	Clinical Training-III	--	--	20	20	10	50
Total			**160**	**240**	**100**	**100**	**50**	**650**

SEMESTER-VII (37-42 MONTHS)

Sl. No	Category	Course Name	Max Marks					Total Marks
			Theory		Practical			
			IA	SEE	IA	P	Viva	
1	Core	Physiotherapy in Musculoskeletal Conditions - IIA	40	60	--	--	--	100
2	Core	Neuro Physiotherapy - A	40	60	--	--	--	100
3	Core	Physiotherapy in General Surgical Conditions & Women's Health /OBG-A	40	60	--	--	--	100
4	Core	Physiotherapy in Musculoskeletal Conditions - IIB	--	--	40	40	20	100
5	Core	Neuro Physiotherapy - B	--	--	40	40	20	100
6	Core	Physiotherapy in General Surgical Conditions & Women's Health/ OBG - B	--	--	40	40	20	100
7	**DSE-I**		--	--	20	20	10	50
8	SEC	Clinical Training-IV	--	--	20	20	10	50
Total								

SEMESTER-VIII (43-48 MONTHS)

Sl. No	Category	Course Name	Theory Max Marks		Practical Max Marks			Total Marks
			IA	SEE	IA	P	Viva	
1	Core	Community & Preventive Physiotherapy - A	40	60	--	--	--	100
2	Core	Health Promotion, Fitness & Wellness	40	60	--	--	--	100
3	Core	Administration	20	30	--	--	--	50
		Teaching Skills	20	30	--	--	--	50
4	Core	Community & Preventive Physiotherapy - B	--	--	40	40	20	100
5	Core	Research Project	--	--	40	--	60	100
6	**DSE-II**		--	--	20	20	10	50
7	SEC	Clinical Training-V	--	--	20	20	10	50
Total			**120**	**180**	**120**	**80**	**100**	**600**

MODEL PROGRAMME STRUCTURE (BPT)

SEMESTER	CORE COURSES		AECC	CLINICAL TRAINING (SEC)	ELECTIVE COURSES			TOTAL CREDITS
	TH	P/R			SEC	GE	DSE	
I	1C1	1P1	1AECC1					21
	IC2	1P2	1AECC2					
	1C3	-						
	1C4	-						
II	2C1	2P1	2AECC1	--				24
	2C2	--		--				
	2C3	--		--				
	2C4	--		--				
	2C5	2P2		--				
III	3C1	3P1	3AECC1	--				21
	3C2	--		--				
	3C3	--		--				
	3C4	3P2		--				
IV	4C1	4P1	4AECC1					22
	4C2	4P2						
	4C3	--		4CT1				
	4C4	--						
	4C5	--						
V	5C1	--	--					21
	5C2	--	--					
	5C3	--	--					
	5C4	--	--	5CT1				
	5C5	--	--					
VI	6C1	--	--					21
	6C2	--	--	6CT1				
	6C3	6P1	--					
	6C4	6P2	--					
(Semester VII-VIII)					ELECTIVES			12
VII	7C1	7P1	--					22
	7C2	7P2	--	7CT1			7DSE1	
	7C3	7P3	--					
VIII	8C1	8P1	--					20
	8C2	--	--	8CT1			8DSE1	
	8C3	--	--					
		8R1	--					
INTERNSHIP								18
TOTAL								202

TH=Theory, Practical, R=Research, AECC=Ability Enhancement Compulsory Courses, SEC=Skill Enhancement Courses, GE=Generic Electives, DSE=Discipline Specific Electives

SEMESTER-I

(1-6 MONTHS)

SEMESTER-I

NAME OF THE COURSE: HUMAN ANATOMY-I

SEMESTER-I DURATION 1to 6 MONTHS

Course description

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE-Evaluation method
	IA	SEE		L	T	P		
HUMAN ANATOMY-*IA	40	60	100	3	1	-	4	Written -60 marks
HUMAN ANATOMY-*IB	40	60	100	-	-	6	3	Practical (OSPE)-40 marks Viva Voce-20 marks

Note: *IA-THEORY *IB PRACTICAL

COURSE CONTENT

Unit No.	Topic	Level of importance	Type of questions
1	**Histology** 1.1. General Histology, study of the basic tissues of the body. 1.2. Microscope, Cell, Epithelium, Connective Tissue, Cartilage, Bone, Muscular tissue, Nerve Tissue 1.3. Circulatory system – large sized artery, medium sized artery, large sized vein, lymphoid tissue 1.4. Skin and its appendages.	Good to know	SA
2	**Embryology** 2.1. Ovum, Spermatozoa, fertilization and formation of the Germ layers and their derivations. 2.2. Development of skin, fascia, blood vessels, lymphatic vessels 2.3. Development of bones, axial and appendicular skeleton and muscles.	Good to know	SA
3	**3.1. Musculo-Skeletal Anatomy** 3.1.1 Anatomical positions of body, axes, planes, common anatomical terminologies (Groove, tuberosity, trochanters etc)	Must know	SE/SA
	3.1.2. Connective tissue classification.	Must know	SE/SA
	3.1.3. Bones- Composition & functions, classification and types according to morphology and development.	Must know	SE/SA

	3.1.4. Joints-definition-classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints.	Must know	LE/SE/SA
	3.1.5. Muscles – structure, types, classification, function	Must know	SE/SA
	3.2. Upper Extremity: **3.2.1. Osteology:** 3.2.1.1. Clavicle 3.2.1.2.Scapula 3.2.1.3. Humerus 3.2.1.4. Radius 3.2.1.5. Ulna 3.2.1.6. Carpals 3.2.1.7. Metacarpals 3.2.1.8. Phalanges	Must know	LE/SE/SA
	3.2.2.Soft parts: 3.2.2.1. Breast 3.2.2.2.Pectoral region, axilla 3.2.2.3. Front of arm,Back of arm 3.2.2.4. Cubital fossa, 3.2.2.5. Front of fore arm, Back of fore arm 3.2.2.6. Palm, Dorsum of Hand 3.2.2.7. Muscles of the Upper limb 3.2.2.8. Skin of the Palm and Dorsum of Hand. 3.2.2.9. Brachial Plexus & Course and relations of nerves 3.2.2.10. Venous Drainage of The Upper Limb 3.2.2.11. Arterial Supply of the Upper Limb 3.2.2.12. Lymphatic Drainage of Upper Extremity	Must know	SE/SA
	3.2.3. Joints: 3.2.3.1. Shoulder girdle 3.2.3.2. Shoulder joint 3.2.3.3. Elbow joints 3.2.3.4. Radio ulnar joint 3.2.3.5. Wrist joint 3.2.3.6. Joints of the hand.	Must know	LE/SE/SA
	3.2.4. Arches of hand	Must know	SE/SA
	3.3. **Lower Extremity** **3.3.1. Osteology**: 3.3.1.1. Hip bone 3.3.1.2. Femur 3.3.1.3. Tibia 3.3.1.4. Fibula 3.3.1.5. Patella 3.3.1.6. Tarsals 3.3.1.7. Metatarsals 3.3.1.8. Phalanges	Must know	LE/SE/SA
	3.3.2. **Soft parts:**	Must know	SE/SA

	3.3.2.1. Gluteal region 3.3.2.2. Front and back of the thigh (Femoral triangle, femoral canal and inguinal canal) 3.3.2.3. Medial side of the thigh (Adductor canal) 3.3.2.4. Lateral side of the thigh 3.3.2.5. Popliteal fossa 3.3.2.6. Anterior and posterior compartment of leg 3.3.2.7. Sole of the foot 3.3.2.8. Lymphatic drainage of lower limb 3.3.2.9. Venous drainage of the lower limb 3.3.2.10. Arterial supply of the lower limb 3.3.2.11. Skin of foot 3.3.2.12. Lumbar plexus 3.3.2.13. Sacral plexus.		
	3.3.3. **Joints**: 3.3.3.1. Hip Joint 3.3.3.2. Knee joint 3.3.3.3. Ankle joint 3.3.3.4. Joints of the foot.	Must know	LE/SE/SA
	3.3.4. Arches of foot	Must know	LE/SE/SA
4	**4.1. Trunk** **4.1.1.Osteology**: 4.1.1.1. Cervical Vertebrae 4.1.1.2. Thoracic Vertebrae 4.1.1.3. Lumbar Vertebrae 4.1.1.4. Sacral and Coccygeal Vertebrae 4.1.1.5. Ribs	Must know	LE/SE/ SA
	4.1.2.Soft tissue: 4.1.2.1. Pre and Para vertebral muscles 4.1.2.2. Intercostals muscles 4.1.2.3. Inter-vertebral disc	Must know	SE/ SA
5	**5.1. Applied Anatomy** Applied Anatomy including radiological anatomy to be discussed under each unit	Nice to know	SE

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

PRACTICAL

HUMAN ANATOMY-*IB

List of Practical / Demonstrations

Students should be able to

- Demonstrate the anatomical position, axes & planes
- Identify and explain the bones, their features and attachments

- Identify the major muscles, nerves and blood vessels
- Demonstrate the action of major joints
- Demonstrate the major landmarks on the body surface

Topics

Unit	Topic	Level of importance
1	Histology [10Hrs]	Good to know
2	Embryology-models, charts & X-rays[10Hrs]	Good to know
3	**Upper extremity including surface Anatomy, Osteology & Myology [20Hrs]** **Osteology:** Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges **Myology**: Muscles of the shoulder girdle, Arm, Forearm and hand • Demonstration of joint movements. • Identification of bony prominences on inspection and by palpation • Palpation of nerves and arteries	Must know
4	**Lower extremity including surface Anatomy, Osteology & Myology [20Hrs]** **Osteology:** Hip bone, Femur, Tibia, Fibula, Patella, Tarsals, Metatarsals & Phalanges. **Myology**: Muscles of the pelvic girdle, Thigh, Leg and Foot • Demonstration of joint movements • Identification of bony prominences on inspection and by palpation • Palpation of nerves and arteries.	
5	**Trunk** **Osteology**: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae & Ribs **Myology:** Pre and Para vertebral muscles Intercostals muscles Inter-vertebral disc	

Pattern of Practical examination:

- Practical- 40 marks (OSPE)
- Viva- 20 marks

Recommended Textbooks:

1. BD Chaurasia's Human Anatomy. Reginal and applied. 8th Edition, Volume I . CBS Publishers. Rs.444.80.

2. BD Chaurasia's Human Anatomy. Reginal and applied. 8th Edition, Volume II . CBS Publishers. Rs.444.80.
3. BD Chaurasia's Human Anatomy. Reginal and applied. 8th Edition, Volume III . CBS Publishers. Rs.444.80.
4. Richard S Snell.Kumar Sathish Ravi. Snell's Clinical Neuroanatomy, 8th Edition. Wolters Kluwer (south Asian edition)Rs.2099/-
5. Inderbir Sing's Human Osteology. JP Brothers, New Delhi
6. S Podar, Ajay Bhagat. Hand book of Osteology. Scientific book company.Rs.276.25.
7. ROMANES G J, Cunningham manual of practical anatomy: upper and lower limb 16thEdition, Vol. 1 Oxford Medical Publication, Oxford 1996, P263, Rs. Rs. 575/-
8. ROMANES G J, Cunningham manual of practical anatomy: Thorax and abdomen 16thEdition, Vol. II Oxford Medical Publication, Oxford 1996, P298, Rs. Rs. 575/-
9. ROMANES G J, Cunningham manual of practical anatomy: Head and Neck and Brain ed.16th Vol. II Oxford Medical Publication, Oxford 1996, P346, Rs. 575/-

Question paper pattern:

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	**60**	

NAME OF THE COURSE: HUMAN PHYSIOLOGY-I

SEMESTER-I DURATION 0 to 6 MONTHS

Course description

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE**-Evaluation method
	IA	SEE		L	T	P		
HUMAN PHYSIOLOGY-*IA	40	60	100	3	1	-	4	Written -60 marks
HUMAN PHYSIOLOGY-*IB	40	60	100	-	-	4	2	Practical (OSPE)-40 marks

								Viva Voce-20 marks

Note: *IA-THEORY *IB PRACTICAL

COURSE CONTENT

Unit No.	Topic	Level of importance	Type of questions
1	**General Physiology [2 Hours]** 1.1. **Cell:** Morphology. Organelles: their structure and functions	Must know	SE/SA
	1.2. Transport Mechanisms across the cell membrane		
	1.3. Body fluids: Distribution, composition. Tissue fluid – formation.		
2	**Blood [10 Hours]** 2.1. Introduction: Composition and functions of blood.	Must know	SE/SA
	2.2. **Plasma:** Composition, formation, functions. Plasma proteins	Must know	SE/SA
	2.3. **RBC:**Count and its variations. Erythropoiesis - stages, factors regulating. Reticulo - endothelial system (in brief) Haemoglobin - Anaemia (in detail), types of Jaundice, Blood indices, PCV, ESR.	Must know	LA/SE/SA
	2.4. **WBC:** Classification. Morphology, functions, count, its variation of each. Immunity		
	2.5. **Platelets:** Morphology, functions, count, its variations	Must know	SE/SA
	2.6. **Haemostatic mechanisms:** Blood coagulation–factors, mechanisms. Their disorders. Anticoagulants.	Must know	LA/SE/SA
	2.7. **Blood Groups:** Landsteiner's law. Types, significance, determination, Erythroblastosis foetalis.	Must know	SE/SA
	2.8. **Blood Transfusion:** Cross matching. Indications and complications.	Good to know	SE/SA
	2.9. **Lymph:** Composition, formation, circulation and functions.	Must know	SA
3	**Nerve Muscle Physiology [15 Hours]** 3.1. **Introduction:** Resting membrane potential. Action potential – ionic basis and properties.	Must know	SE/SA
	3.2. **Nerve:** Structure and functions of neurons. Classification, Properties and impulse transmission of nerve fibres. Nerve injury – degeneration and regeneration.	Must know	LA/SE
	3.3. **Neuroglia:** Types and functions.	Must know	SE
	3.4. **Muscle:** 3.4.1. Classification. 3.4.2. **Skeletal muscle:** Structure, Excitation-Contraction coupling. Rigormortis. Motor unit. Properties of skeletal muscles, Strength- Duration curve, Length-tension relationship, fatigue, load. 3.4.3. **Smooth muscle:** Structure, types, mechanism of contraction. Plasticity**.**	Must know	SE/SA
	3.5. **Neuro-muscularjunction**:Structure, Neuromuscular transmission, Myasthenia gravis.		
4	**Cardiovascular System [15 Hours]** 4.1. **Introduction:** Physiological anatomy and nerve supply of the	Must know	SE/SA

	heart and blood vessels.		
	4.2. **Organisation of CVS. Cardiac muscles:** Structure. Ionic basis of action potential andpacemaker potential. Properties.	Must know	SE/SA
	4.3. **Conducting system:** Components. Impulse conduction Cardiac Cycle: Definition. Phases of cardiac cycle. Pressure and volume curves. Heart sounds – causes, character. ECG: Definition. Different types of leads. Waves and their causes. P-R interval. Heart block.	Must know	LA/SE/SA
	4.4. **Cardiac Output**: Definition. Normal value. Determinants. Stroke volume and its regulation. Heart rate and its regulation. Their variations	Must know	SE/SA
	4.5. **Arterial Blood Pressure:** Definition. Normal values and its variations. Determinants.Peripheral resistance. Regulation of BP.		
	4.6. Arterial pulse.		
	4.7. **Shock:** Definition. Classification–causes and features		
	4.8. **Regional Circulation:** Coronary, Cerebral and Cutaneous circulation.		
	4.9. Cardiovascular changes during exercise.	Must know	LA/SE
5	**Respiratory System [12 Hours]** 5.1. **Introduction:** Physiological anatomy – Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system. Respiratory muscles.	Must know	SE/SA
	5.2. **Mechanics of breathing:** Intrapleural and Intrapulmonary pressure changes during respiration. Chest expansion. Lung compliance: Normal value, pressure-volume curve, factors affecting compliance and its variations. Surfactant – Composition, production, functions. RDS	Must know	LA/SE
	5.3. **Spirometry:** Lung volumes and capacities. Timed vital capacity and its clinical significance. Maximum ventilation volume. Respiratory minute volume.	Must know	SE/SA
	5.4. **Dead Space:** Types and their definition.	Must know	SA
	5.5. Pulmonary Circulation. Ventilation-perfusion ratio and its importance.	Must know	SE/SA
	5.6. **Transport of respiratory gases:** Diffusion across the respiratory membrane. **Oxygen transport:** Different forms, oxygen-haemoglobin dissociation curve, Factors affecting it. P50, Haldane and Bohr Effect. **Carbon dioxide transport:** Different forms, chloride shift.	Must know	LA/SE/SA
	5.7. **Regulation of Respiration:** Neural Regulation. Hering-breuer's reflex. Voluntary control. Chemical Regulation.	Must know	LA/SE/SA
	5.8. **Hypoxia:** Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy. Acclimatization Hypercapnoea. Asphyxia. Cyanosis – types and features. Dysbarism	Must know	SE/SA
	5.9. **Disorders of Respiration:** Dyspnoea. Orthopnoea. Hyperpnoea, hyperventilation, apnoea, tachypnoea. periodic breathing – types	Must know	SE/SA
	5.10. Artificial respiration	Good to	SE/SA

		know	
	5.11. Respiratory changes during exercise	Must know	LA/SE
6	**Applied Physiology [6 Hours]** **6.1. Pulmonary Functions** 6.1.1. Properties of gases, Mechanics of respiration, Diffusion capacity, special features of pulmonary circulation and their application. 6.1.2. Breath sounds.	Must know	SE/SA
	6.2. Cardio vascular Functions 6.2.1. Blood flow through arteries, arterioles, capillaries, veins and venuoles. 6.2.2. Circulation of Lymph, Oedema 6.2.3. Factors affecting cardiac output. 6.2.4. Circulatory adjustment in exercise and in postural and gravitational changes, 6.2.5. Pathophysiology of fainting and heart failure.	Must know	SA/SE
	6.3. Blood functions 6.3.1. Thalassemia Syndrome,Haemophilia,VWF, Anaemia, Leucocytosis, Bone marrow transplant.	Nice to know	SA/SE

Note: LE=Long Essay, SE=Short Essay, SA= Short Answer

PATTERN OF PRACTICAL EXAMINATION:

- Practical- 40 marks (OSPE)
- Viva- 20 marks

PRACTICAL

1. **Haematology (To be done by the students) [20 Hours]**
    a. Study of Microscope and its uses
    b. Determination of RBC count
    c. Determination of WBC count
    d. Differential leukocyte count
    e. Estimation of hemoglobin
    f. Calculation of blood indices
    g. Determination of blood groups
    h. Determination of bleeding time
    i. Determination of clotting time
2. **Clinical Examination [10 Hours]**
    a. Examination of Radial pulse.
    b. Recording of blood pressure
    c. Examination of CVS
    d. Examination of Respiratory system
    e. Examination of Motor System
3. **Demonstrations only**

a. Determination of ESR
b. Determination of PC

Recommended Textbooks:

1. Sujit K Chaudhuri.Concise medical physiology
2. AKJain. Text book of Physiology. Avichal Publishing Company.
3. C N Chandrasekhar.Manipal Manual of Physiology. CBS,2019. Rs.369/-
4. Guyton &Hall Text book of medical physiology. Elsevier Health Science;3rd Edition. 2020
5. Basics of Medical physiology- Venkatesh D &Sudhakar H H
6. O P Tandon, Tripathi. Best & Taylors Physiological basis of medical practice. Wolters Kluwer India Pvt ltd.Rs.2150/-
7. Nitin Ashok john. CC Chatterjee'sHuman Physiology, Volume-I.CBS. Rs.734/-
8. Nitin Ashok john. CC Chatterjee'sHuman physiology, Volume-II.CBS. Rs.950/-

Question paper pattern:

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

NAME OF THE COURSE:

PART A- GENERAL &CLINICAL PSYCHOLOGY
PART B-SOCIOLOGY

Duration: 0-6 months

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE-** Evaluation method
	IA	SEE		L	T	P		
Part A- General and Clinical Psychology	20	30	50	2	-	-	2	Written -30 marks
Part B-Sociology	20	30	50	2	-	-	2	Written -30 marks
	40	**60**	**100**	**4**	**-**	**-**	**4**	**60**

PART A- GENERAL &CLINICAL PSYCHOLOGY

Unit	Topic	Level of importance	Type of questions
1	Introduction to Psychology 1.1. **Schools:** Structuralism, functionalism, behaviourism, Psychoanalysis. 1.2. **Methods:** Introspection, observation, inventory and experimental method. 1.3. **Branches:** pure psychology and applied psychology 1.4. Psychology and physiotherapy	**Must know**	**LE/SE**
2	**Growth and Development** 2.1. **Life span:** Different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age). 2.2. **Heredity and environment:** role of heredity and environment in physical and psychological development, "Nature v/s Nurture controversy".	**Must know**	**SE**
3	**Sensation, attention and perception** 3.1. **Sensation:** Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense. 3.2. **Attention:** Types of attention, Determinants of attention (subjective determinants and objective determinants). 3.3. **Perception:** Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (past experience and context). 3.4. **Illusion and hallucination:** Types.	**Must know**	**SE**
4	**Motivation** 4.1. Motivation cycle (need, drive, incentive, reward). 4.2. Classification of motives. 4.3. Abraham Maslow's theory of need hierarchy	**Must know**	**SE**
5	**Frustration and conflict** 5.1. Frustration: sources of frustration. 5.2. Conflict: types of conflict. 5.3. Management of frustration and conflict	**Must know**	**SE**
6	**Emotions** 6.1. Three levels of analysis of emotion (physiological level, subjective state, and overt behaviour).	**Must know**	**SE**

	6.2. Theories of emotion 6.3. Stress and management of stress.		
7	**Intelligence** 7.1. Theories of intelligence. 7.2. Distribution of intelligence. **7.3.** Assessment of intelligence	**Must know**	**SE**
8	**Thinking** 8.1. Reasoning: deductive and inductive reasoning. 8.2. Problem solving: rules in problem solving (algorithm and heuristic) 8.3. Creative thinking: steps in creative thinking, traits of creative people	**Must know**	**LE/SE**
9	**Learning** 9.1. Factors effecting learning 9.2. **Theories of learning:** trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory. 9.3. **The effective ways to learn:** Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.	**Must know**	**LE/SE**
10	**Personality** 10.1. **Approaches to personality:** Type & trait, behaviouristic, psychoanalytic and humanistic approach. 10.2. **Personality assessment:** Observation, situational test, questionnaire, rating scale, interview, and projective techniques. 10.3. **Defense Mechanisms:** Denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjections, acting out.	**Must know**	**SE**
11	**Social psychology** 11.1. **Leadership:** Different types of leaders. Different theoretical approaches to leadership. 11.2. **Attitude**: development of attitude. Change of attitude.	**Good to know**	**SE**

12	**Clinical psychology** Models of training, abnormal behavior assessment, clinical judgment, psychotherapy, self-management methods, physiotherapist patient interaction, aggression, self-imaging, stress management, assertive training, Group therapy, Body awareness, Paediatric, child and geriatric clinical psychology.	**Must know**	**SE**

Note: LE= Long essay, SE= Short Essay

Question paper pattern

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
Part A -GENERAL AND PSYCHOLOGY	**Long Essay (LE)**	02	01	10	10
	Short Essay (SE)	07	05	04	20
				Total	**30**

Recommended text books:

1. Feldman.R.H(1996). Understanding Psychology. New Delhi: Tata McGraw hill.
2. Morgan et al(2003). Introduction to Psychology. New Delhi: Tata McGraw hill.
3. Lefton. Psychology. Boston: Alwin&Bacot Company.
4. Mangal, S.K (2002). Advanced Educational Psychology. New Delhi: prentice hall.
5. Atkinson(1996). Dictionary of Psychology.

PART B-SOCIOLOGY

Unit	Topic	Level of importance	Type of questions
1	**Introduction:** 1.1. Meaning, Definition and scope of sociology, Its relation to Anthropology, Psychology, Social Psychology. 1.2. **Methods of Sociological investigations-** Case study, social survey, questionnaire, Interview and opinion poll methods. Importance of its study with special reference to Health Care Professionals.	**Must know**	**LE/SE**

2	**Social Factors in Health and disease situations** 2.1. Meaning of social factors 2.2. Role of social factors in health and illness	**Must know**	**LE/SE**
3	**Socialization:** 3.1. Meaning and nature of socialization. 3.2. Primary, Secondary and Anticipatory socialization. 3.3. Agencies of socialization.	**Good to know**	**SE**
4	**Social Groups:** 4.1. Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup.	**Must know**	**SE**
5	**Family:** 5.1. The family, meaning and definitions. 5.2. Functions of types of family 5.3. Changing family patterns 5.4. Influence of family on the individual's health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to physiotherapy.	**Must know**	**LE/SE**
6	**Community:** 6.1. Rural community: Meaning and features –Health hazards of ruralities, health hazards to tribal community. 6.2. Urban community: Meaning and features- Health hazards of urbanities.	**Must know**	**LE/SE**
7	**Culture and Health:** 7.1. Concept of Health 7.2. Concept of Culture	**Must know**	**LE/SE**

	7.3. Culture and Health 7.4. Culture and Health Disorders		
8	**Social change:** 8.1. Meaning of social changes. 8.2. Factors of social changes. 8.3. Human adaptation and social change 8.4. Social change and stress. 8.5. Social change and deviance. 8.6. Social change and health programme 8.7. The role of social planning in the improvement of health and rehabilitation.	**Must know**	**SE**
9	**Social Problems of disabled:** Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems. 9.1. Population explosion 9.2. Poverty and unemployment 9.3. Beggary 9.4. Juvenile delinquency 9.5. Prostitution 9.6. Alcoholism 9.7. Problems of women in employment 9.8. Geriatric problems 9.9. Problems of underprivileged.	**Must know**	**LE/SE**
10	**Social Security:** 10.1. Social security and social legislation in relation to	**Must know**	**SE**

	the disabled.		
11	**Social worker:** 11.1. Meaning of Social Work 11.2. The role of a Medical Social Worker.	**Must know**	**SE**

Note: LE= Long essay, SE= Short Essay

Question paper pattern

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
PART B- SOCIOLOGY	**Long Essay (LE)**	02	01	10	10
	Short Essay (SE)	07	05	04	20
				Total	**30**

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

NAME OF THE COURSE: CONSTITUTION OF INDIA

- This course is to keep the students abreast with the knowledge of the Constitution of India.
- To make the students understand the importance of human rights as citizens of India.

Course: AECC (Ability Enhancement Compulsory Course)

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURSPER WEEK**			**CREDITS**	**SEE** Evaluation method
	CIA	SEE		L	T	P		
Constitution of India	20	30	50	2		-	2	**Written** - 30marks

Objectives: By the end of this course, a student will

- State and explain the constitution of India and its Constituent Assembly
- Explain fundamental rights and duties of citizen

- Identify union, state and federalism of India
- Knowledge of electoral process in India.
- State the basic concepts of Human Rights and its functions and authorities in society.

COURSE CONTENT

Unit	Topic	Number of hours	
1	**Indian Constitution.** 1.1. Meaning and Importance of Constitution 1.2. The Constituent Assembly 1.3. The Preamble 1.4. Salient Features of Constitution	**5**	Must know
2	**Fundamental Rights and Directive Principles**. 2.1. Meaning and Differences between Fundamental Rights and Directive Principles 2.2. Fundamental Rights 2.3. Rights Information Act Meaning, importance of RTI 2005	**3**	Must know
3	Union Government 3.1. President of India- Election, Powers and Position 3.2. Prime Minister and council of Ministers 3.3. Parliament: LokSabha, RajyaSabha- Organisations and Powers	**4**	Must know
4	State Government 4.1. The Governor 4.2. Chief Minister and Council of Ministers 4.3. State Legislature VidhanaSabha, VidhanaParishad – organization and Powers	**4**	Must know
5	Federalism In India • Meaning Federal and Unitary Features	**2**	Must know
6	The Judiciary 6.1. The supreme Court – Organization, Jurisdiction and Role 6.2. The High Court – Organization Jurisdiction and Role	**2**	Must know
7	Electoral Process In India	**2**	Must know

	• Election Commission – Organization, Functions		
8	Local Governments • Rural and Urban : Organisation, Powers and Functions	**2**	Must know
9	Human Rights 9.1. Human rights – Meaning 9.2. Universal Declaration of Human Rights 9.3. Remedies against Violation of Human Rights in India	**3**	Must know
10	Special constitutional provisions 10.1. Special Rights created in the constitution for: Dalits, Backwards, women and Children and the 10.2. Religious and Linguistic Minorities. 10.3. Constitution and Sustainable Development in India. 10.4. Minority Commission in India	**3**	Must know

Recommended Books

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

QUESTION PAPER PATTERN

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
Constitution of India	**Essay (LE)**	07	05	04	20
	Short answers (SE)	07	05	02	10
				Total	**30**

NAME OF THE COURSE: ENGLISH& COMMUNICATION

Course: AECC (Ability Enhancement Compulsory Course)

COURSE	MAX MARKS		TOTAL MARKS	HOURSPER WEEK			CREDITS	SEE Evaluation method
	CIA	SEE		L	T	P		
English and Communication	20	30	50	2		-	2	**Written** - 30marks

Major topics to be covered under Communication course –

1. Basic Language Skills: Grammar and Usage.
2. Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.
3. Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.
4. Basic concepts & principles of good communication
5. Special characteristics of health communication
6. Types & process of communication – verbal, non-verbal and written communication. Upward, downward and lateral communication.
7. Therapeutic communication: empathy versus sympathy.
8. Communication methods for teaching and learning.
9. Communication methods for patient education.
10. Barriers of communication & how to overcome.

QUESTION PAPER PATTERN

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
English and Communication	**Essay (LE)**	07	05	04	20
	Short answers (SE)	07	05	02	10
				Total	**30**

SEMESTER -II

(7-12 months)

SEMESTER-II DURATION 7 to 12 MONTHS

NAME OF THE COURSE: HUMAN ANATOMY-II

Course description

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE-Evaluation method
	IA	SEE		L	T	P		
Human Anatomy-*IIA	40	60	100	3	1	-	4	Written -60 marks
Human Anatomy-*IIB	40	60	100	-	-	6	3	**Practical** (OSPE)-40 marks **Viva Voce**-20 marks

Note: *IA-THEORY *IB PRACTICAL

Unit No.	Topic	Level of importance	Type of questions
1	**Embryology** 1.1. Neural tube, brain vessels and spinal cord 1.2. Development of brain and brain stem structures 1.3. Developmental anomalies	Good to know	Short answers
2	**Regional Anatomy** **2.1. THORAX** **2.1.1. Cardio – Vascular System** 2.1.1.1.Mediastinum: Divisions and contents 2.1.1.2.Pericardium: Thoracic Wall: position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise.	Must know	LE/SE/SA
	2.1.2. Respiratory system 2.1.2.1. Outline of respiratory passages 2.1.2.2.Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on broncho-pulmonary segments 2.1.2.3.Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm. 2.1.2.4.Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.	Must know	LE/SE/SA

	2.2. ABDOMEN: 2.2.1. Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum. 2.2.2. Large blood vessels of the gut 2.2.3. Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, gall bladder.	Good to Know	SE/SA
	2.3. PELVIS: 2.3.1. Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system.	Nice to Know	SE/SA
3	**3.1. Head and Neck:** 3.1.1. Osteology: Mandible and bones of the skull. 3.1.2. Soft parts: Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck 3.1.3. Gross anatomy of eyeball, nose, ears and tongue.	Good to Know	SE/SA
	3.2. Pelvis: 3.2.1. Pelvic girdle and muscles of the pelvic floor 3.2.2. Anterior abdominal wall muscles	Must know	LE/SE/SA
4	**4.1. Endocrine glands:** Position, shape, size, function, blood supply and nerve supply of the following glands: 4.1.1. Hypothalamus and pituitary gland 4.1.2. Thyroid glands 4.1.3. Parathyroid glands 4.1.4. Adrenal glands 4.1.5. Pancreatic islets 4.1.6. Ovaries and testes 4.1.7. Pineal glands 4.1.8. Thymus.	Must know	SE/SA
5	Neuro-Anatomy 5.1.**Organization of Central Nervous system** - Spinal nerves and autonomic nervous system	Must know	LE/SE/SA

	mainly pertaining to cardiovascular, respiratory and urogenital system 5.2.**Cranial nerves** 5.3.**Peripheral nervous system** 5.3.1. Peripheral nerve 5.3.2. Neuromuscular junction 5.3.3. Sensory end organs 5.4.**Central Nervous System** 5.4.1. Spinal segments and areas 5.4.2. Brain Stem 5.4.3. Cerebellum 5.4.4. Inferior colliculi 5.4.5. Superior Colliculi 5.4.6. Thalamus 5.4.7. Hypothalams 5.4.8. Corpusstriatm 5.4.9. Cerebral hemisphere 5.4.10. Lateral ventricles 5.4.11. Blood supply to brain 5.4.12. Basal Ganglia 5.4.13. The pyramidal system 5.4.14. Pons 5.4.15. Medulla 5.4.16. Extra pyramidal systems		

Note: LE=Long Essay, SE=Short Essay, SA= Short Answer

QUESTION PAPER PATTERN:

Maximum marks: 60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay	03	02	10	20	150 minutes
Short Essay	07	05	04	20	
Short answer	12	10	02	20	
			Total	**60**	

PRACTICAL

HUMAN ANATOMY-*IIB

List of Practical / Demonstrations

Students will be able to

- Identify and explain the bones, their features and attachments
- Identify the major muscles, nerves and blood vessels
- Demonstrate the action of major joints
- Demonstrate the major landmarks on the body surface

Unit	Topic	Level of importance
1	**Thorax including surface anatomy [5Hrs]** • Demonstration of the organs in thorax in a cadaver • Surface making of the lung, pleura, fissures and lobes of lungs, and heart.	Must know
2	Pelvis including surface Anatomy and Osteology [20Hrs]	Must know
3	Identify the muscles of abdomen and pelvic girdle and explain the functions, nerve supply and blood supply[20Hrs]	Must know
4	Head and Neck, Brain and Spinal cord including surface anatomy • Surface marking of the liver, spleen, kidney, cranial nerves and spinal nerves • Demonstration of the organs in abdomen in a cadaver	Must know

PATTERN OF PRACTICAL EXAMINATION:

- Practical- 40 marks (OSPE)
- Viva- 20 marks

Recommended Textbooks:

1. BD Chaurasia's Human Anatomy. Reginal and applied. 8th Edition, Volume I,II &III . CBS Publishers. Rs.444.80.
2. Richard S Snell.Kumar Sathish Ravi. Snell's Clinical Neuroanatomy, 8th Edition. Wolters Kluwer (south Asian edition) Rs.2099/-
3. Inderbir Sing's Text book of Anatomy with colour atlas: Introduction, Osteology, Upper Extremity, Lower Extremity. Vol. I. JP Brothers, New Delhi. 2019.
4. Inderbir Sing's Text book of Anatomy with colour Atlas: Thorax and Abdomen. Vol. II. JP Brothers, New Delhi , 2019.
5. Inderbir Sing's Text book of Anatomy with colour Atlas: Head and Neck Central Nervous System. Vol. III. JP Brothers, New Delhi ,2019.
6. Inderbir Sing's Human Osteology. JP Brothers, New Delhi

7. S Podar, Ajay Bhagat. Hand book of Osteology. Scientific book company.Rs.276.25.

Practical

8. ROMANES G J, Cunningham manual of practical anatomy: upper and lower limb 16th Edition ,Vol. 1 Oxford Medical Publication, Oxford 1996, P263, Rs. Rs. 575/-
9. ROMANES G J, Cunningham manual of practical anatomy: Thorax and abdomen 16thEdition,Vol. II Oxford Medical Publication, Oxford 1996, P298, Rs. Rs. 575/-
10. ROMANES G J, Cunningham manual of practical anatomy: Head and Neck and Brain ed. 16th Vol. II Oxford Medical Publication, Oxford 1996, P346, Rs. 575/-

NAME OF THE COURSE: HUMAN PHYSIOLOGY-II

SEMESTER-II DURATION 7 to 12 MONTHS

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE-Evaluation method
	IA	SEE		L	T	P		
Human Physiology -II	40	60	100	2	1	-	3	Written -60 marks

COURSE CONTENT

Unit	Topics	Level of Importance	Type of questions
1	**Digestive System (5 Hours)** Introduction: Physiological anatomy and nerve supply of alimentary canal. Enteric nervous system	Good to know	SE, SA
	Salivary Secretion: Saliva: Composition. Functions. Regulation. Mastication	Good to know	SE, SA
	Swallowing: Definition. Different stages. Functions.	Good to know	SE, SA
	Stomach: Functions. Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation. Peptic ulcer. Gastric motility. Gastric emptying. Vomiting.	Good to know	SE, SA
	Pancreatic Secretion: Composition, production, function. Regulation.	Nice to know	SA
	Liver: Functions of liver. Bile secretion: Composition, functions and regulation. Gall bladder: Functions.	Good to know	SE/ SA
	Intestine: Succusentericus: Composition, function and	Nice to	SA

	regulation of secretion. Intestinal motility and its function and regulation.	know	
	Mechanism of Defaecation.	Nice to know	SA
2	**Renal System [8 Hours]** **Introduction:** Physiological anatomy. Nephrons – cortical and juxtamedullary. Juxta-glomerular apparatus. Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys.	Good to know	SE/ SA
	Mechanism of Urine Formation:Glomerular Filtration: Mechanism of glomerular filtration. GFR – normal value and factors affecting. Renal clearance. Inulin clearance. Creatinine clearance.	Must Know	LE/SE/SA
	Tubular Reabsorption: Reabsorption of Na^+, glucose, HCO_3^-, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: TmG. Renal threshold for glucose.	Good to know	SE/ SA
	Tubular Secretion: Secretion of H^+ and K^+. PAH clearance.	Good to know	SE, SA
	Mechanism of concentrating and diluting the Urine: Counter-current mechanism. Regulation of water excretion. Diuresis. Diuretics.	Good to know	SE/ SA
	Micturition: Mechanism of micturition. Cystometrogram. Atonic bladder, automatic bladder.	Must know	LE, SE, SA
	Acid-Base balance (very brief)	Must know	SE, SA
	Artificial Kidney: Principle of haemodialysis.	Nice to know	SA
	Skin and temperature regulation.	Good to know	SE, SA
3	**Endocrine System [10 Hours]** **Introduction:** Major endocrine glands. Hormone: classification, mechanism of action. Functions of hormones	Good to know	SE, SA
	Pituitary Gland: Anterior Pituitary and Posterior Pituitary hormones: Secretory cells, action on target cells, regulation of secretion of each hormone. Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus. Physiology of growth and development: hormonal and other influences.	Must know	LE, SE, SA

	Pituitary-Hypothalamic Relationship.	Nice to know	SA
	Thyroid Gland:Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxoedema, Cretinism, Grave's disease.	Good to know	SE, SA
	Parathyroid hormnes: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism. Hyperthyroidism.Calcium metabolism and its regulation.	Nice to know	SA
	Adrenal Gland: Adrenal Cortex: Secretory cells, synthesis, action, regulation of secretion of Aldosterone, Cortisol, Androgens. Disorders: Addison's disease, Cushing's syndrome, Conn's syndrome, Adrenogenital syndrome. Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline. Disorders: Phoechromocytoma.	Good to know	SA
	Endocrine Pancreas: Secretory cells, action, regulation of secretion of insulin and glucagon. Glucose metabolism and its regulation. Disorder: Diabetes mellitus.	Good to know	SA
	Calcitrol, Thymus and Pineal gland (very brief).	Nice to know	SA
	Local Hormones (briefly).	Nice to know	SA
4	**Reproductive System [5 Hours]** Introduction: Physiological anatomy reproductive organs. Sex determination. Sex differentiation. Disorder	Nice to know	SA
	Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen.	Nice to know	SA
	Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Oogenesis. Hormones:oestrogen and progesterone-action. regulation of secretion. MentrualCycle: Phases. Ovarian cycle. Uterine cycle. Hormonal basis. Menarche. Menopause. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Lactation. Contraception methods	Nice to know	SA
5	**Special Senses [10 Hours]** Vision: Introduction: Functional anatomy of eye ball.	Good to know	SE, SA

	Functions of cornea, iris, pupil, aqueous humor – glaucoma, lens – cataract, vitreous humor, rods and cones. Photopic vision. Scotopic vision.		
	Visual Pathway and the effects of lesions.	Good to know	SE, SA
	Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism.	Good to know	SE, SA
	Visual Reflexes: Accommodation, Pupillary and Light. Visual acuity and Visual field. Light adaptation. Dark adaptation.Color vision – color blindness. Nyctalopia.	Good to know	SE, SA
	Audition: Physiological anatomy of the ear. Functions of external ear, middle ear and inner ear. Structure of Cochlea and organ of corti. Auditory pathway. Types of Deafness Tests for hearing. Audiometry.	Good to know	SE, SA
	Taste: Taste buds. Primary tastes. Gustatory pathway.	Good to know	SE, SA
	Smell: Olfactory membrane. Olfactory pathway.	Good to know	SE, SA
	Vestibular Apparatus: Crista ampullaris and macula. Funcions. Disorders.	Good to know	SE, SA
6	**Nervous System [20 Hours]** Introduction: Organisation of CNS – central and peripheral nervous system. Functions of nervous system. Synapse: Functional anatomy, classification, Synaptic transmission. Properties.	Must know	LE, SE, SA
	Sensory Mechanism: Sensory receptors: function, classification and properties. Sensory pathway: The ascending tracts – Posterior column tracts, lateral spinothalamic tract and the anterior spinothalamic tract – their origin, course, termination and functions. The trigeminal pathway. Sensory cortex. Somatic sensations: crude touch, fine touch, tactile localization, tactile discrimination, stereognosis, vibration sense, kinesthetic sensations. Pain sensation: mechanism of pain. Cutaneous pain –slow and fast pain, hyperalgesia. Deep pain. Visceral pain – referred pain. Gate control theory of pain. tabes dorsalis, sensory ataxia.	Must know	LE, SE, SA
	Motor Mechanism: Motor Cortex. Motor pathway: The descending tracts – pyramidal tracts, extrapyramidal tracts	Must know	LE, SE, SA

	– origin, course, termination and functions. Upper motor neuron and lower motor neuron. Paralysis, monoplegia, paraplegia, hemiplegia and quadriplegia.		
	Reflex Action: components, Bell-Magendie law, classification and Properties. Monosynaptic and polysynaptic reflexes, superficial reflexes, deep reflexes.Stretch reflex– structure of muscle spindle, pathway, higher control and functions. Inverse stretch reflex. Muscle tone – definition, and properties hypotonia, atonia and hypertonia. UMNL and LMNL	Must know	LE, SE, SA
	Spinal cord Lesions: Complete transection and Hemisection of the spinal cord.	Must know	LE, SE, SA
	Cerebellum: Functions. Cerebellar ataxia.	Must know	LE, SE, SA
	Posture and Equilibrium: Postural reflexes – spinal, medullary, midbrain and cerebral reflexes.	Must know	LE, SE, SA
	Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome	Must know	LE, SE, SA
	Reticular Formation and Limbic System: Components and Functions.	Must know	LE, SE, SA
	Basal Ganglia: Structures included and functions. Parkinson's disease.	Must know	LE, SE, SA
	Cerebral Cortex: Lobes. Brodmann's areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.	Must know	LE, SE, SA
	EEG : Waves and features. Sleep: REM and NREM sleep.	Good to know	SE, SA
	CSF: Formation, composition, circulation and functions. Lumbar puncture and its significance. Blood brain barrier. Hydrocephalus.	Good to know	SE, SA
	ANS: Features and actions of parasymapathetic and sympathetic nervous system.	Good to know	SE, SA
7	**Physiology of Exercise [15 Hours]** a. Effects of acute and chronic exercise on i. O2 transport ii. Muscle strength/power/endurance iii. B.M.R./R.Q. iv. Hormonal and metabolic effect v. Cardiovascular system	Must know	SE, SA

	vi. Respiratory system vii. Body fluids and electrolyte		
	Effect of gravity / altitude /acceleration / pressure on physical parameters	Must know	SE, SA
	Physiology of Age	Must know	SE, SA
8	**Applied Physiology [7 Hours]** More detailed study of the physiology and practical applications of the following selected topics with emphasis on aspects, which should help in understanding the nature and treatment of common clinical situations of interest in Physiotherapy. **Muscles and Nervous System Functions** a) Peripheral nervous system, Neuromuscular transmission, Types of nerve fibres. b) Action potential, Strength-duration curve, ECG, EMG, VEP, NCV c) Degeneration and regeneration of nerve, Reactions of denervations. d) Synaptic transmission, Stretch reflex- Mechanism and factors affecting it. e) Posture, Balance and Equilibrium/Coordination of voluntary movement f) Voluntary motor action, clonus, Rigidity, Discordination, g) Special senses- Vision, taste, hearing, vestibular, Olfaction h) Sympathetic and Parasympathetic regulation, Thermoregulation.	Must know	SE, SA
	Metabolic Functions I. Diabetes Mellitus, II. Physiological basis of Peptic Ulcer, III. Jaundice, IV. GIT disorders and Dietary fiber, V. Thyroid functions, VI. Vitamins deficiency	Good to know	SE, SA

QUESTION PAPER PATTERN(THEORY)

Maximum marks: 60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay	03	02	10	20	150 minutes
Short Essay	07	05	04	20	
Short answer	12	10	02	20	
			Total	**60**	

PRACTICAL

1. Clinical Examination [10 Hours]
    a. Examination of Sensory system
    b. Examination of reflexes
    c. Examination of cranial nerves

2. Amphibian Experiments – Demonstration and Dry charts Explanation. [15 Hours]
    a. Instruments used for frog experiments. Kymograph, heart liver, Muscle trough, stimulator.
    b. Simple muscle curve.
    c. Effect of increasing the strength of the stimuli
    d. Effect of temperature on muscle contraction.
    e. Effect of two successive stimuli.
    f. Effect of Fatigue.
    g. Effect of load on muscle contraction
    h. Genesis of tetanus and clonus.
    i. Velocity of impulse transmission.
    j. Normal cardiogram of amphibian heart.
    k. Properties of Cardiac muscle
    l. Effect of temperature on cardiogram.
3. Recommended Demonstrations [5 Hours]
    a. Spirometry
    b. Artificial Respiration
    c. ECG
    d. Perimetry
    e. Mosso'sErgometry

Recommended Textbooks:

1. Sujit K Chaudhuri.Concise medical physiology
2. AKJain. Text book of Physiology. Avichal Publishing Company.
3. C N Chandrasekhar.Manipal Manual of Physiology. CBS,2019. Rs.369/-
4. Guyton &Hall Text book of medical physiology. Elsevier Health Science;3rd Edition. 2020
5. Basics of Medical physiology- Venkatesh D &Sudhakar H H
6. O P Tandon, Tripathi. Best & Taylors Physiological basis of medical practice. Wolters Kluwer India Pvt ltd.Rs.2150/-
7. Nitin Ashok john. CC Chatterjee'sHuman Physiology, Volume-I.CBS. Rs.734/-
8. Nitin Ashok john. CC Chatterjee'sHuman physiology, Volume-II.CBS. Rs.950/-

NAME OF THE COURSE: BIOCHEMISTRY

SEMESTER-II DURATION 7 to 12 MONTHS

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE- Evaluation method
	IA	SEE		L	T	P		
Biochemistry	40	60	100	3	-	-	3	Written -60 marks

COURSE CONTENT

Unit No.	Topic	Level of importance	Type of questions
1.	1.1.Introduction to biochemistry and its scope **1.2.Chemistry of Carbohydrates:(3 Hours)** 1.2.1. Definition, classification, structures (without isomerism), properties. 1.2.2. Functions and sources of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides. 1.2.3. Glycosaminoglycans (mucopolysaccharides) – General properties, types, tissues distribution functions.	Must know	LE/SE/SA
2.	**Chemistry of Amino acids, Peptides and Proteins (2 Hours)** **2.1.Amino acid:** Definition, classification, structure,	Must know	LE/SE/SA

	properties and functions. **2.2.**Biologically important peptides. **2.3.Protein:** Definition, classification, structural organization (in brief), denaturation (in brief). **2.4.Collagen and elastin:** Structure, function and distribution (in brief)		
3.	**Chemistry of Lipids: (2 Hours)** **3.1.**Definition, classification, properties and functions. **3.2.**Fatty Acids, triacylglycerol, compound lipids and cholesterol. **3.3.Lipoproteins:** Classification, composition and functions. Normal blood levels of lipids, atherosclerosis, and myocardial infarction	Must know	LE/SE/SA
4.	**Chemistry of Nucleotide and Nucleic acid (2 Hours)** **4.1.Nucleotide chemistry:** Nucleotide structure; functions of free nucleotides. **4.2.Nucleic acid (DNA and RNA) chemistry:** Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. **4.3.**Structure and functions of tRNA, rRNA, mRNA, snRNA.	Good to know	SE/SA
5.	**Enzymes and Clinical Enzymology (3Hours)** **5.1.**Definition, active site, specificity, cofactor (coenzyme, activator). Classification with examples. **5.2.**Factors effecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymes	Must know	LE/SE/SA
6.	**Digestion and Absorption (2 Hours)** **6.1.**General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. **6.2.**Lactose intolerance	Good to know	SE/SA
7.	**Intermediary Metabolism (1 Hour)** **7.1.**Introduction to metabolism, High energy compounds	Good to know	SE/SA
8.	**Carbohydrate Metabolism (4 Hours)** **8.1.**Introduction	Must know	LE/SE/SA

	8.2.Reactions, energetics (if any) and functions of: Glycolysis (Rappaport Leubering cycle included), Citric acid cycle (anaplerosis not included), Glycogen metabolism [Glycogen storage disorders, Type 1 to 4 (Type 1 in detail) included], Gluconeogenesis, Cori cycle.		
9.	**Lipid Metabolism (3 Hours)** **9.1.**Beta oxidation of fatty acids and its energetics **9.2.**Ketone body formation, utilization and Ketoacidosis **9.3.**Outlines of synthesis of palmitic acid, triglycerides and lipolysis	Must know	LE/SE/SA
10.	**Regulation of Blood glucose, Hormonal regulation of blood glucose, Diabetes Mellitus. (1 Hour)**	Must know	LE/SE/SA
11.	**Amino acid and Protein Metabolism (3 Hours)** **11.1.** Catabolism of amino acids – Introduction, transamination, deamination, fate of ammonia, transport of ammonia, urea cycle. **11.2.** List of biologically important compounds formed from amino acids and their functions - glycine, methionine, phenylalanine and tyrosine.	Must know	LE/SE/SA
12.	**Liver function tests, renal function tests (2 Hours)** **12.1.** Liver function tests (exclude bromsulphthalein excretion test, galactose tolerance test and Hippuric acid test) **12.2.** Renal Function Test – clearance tests (creatinine clearance test)	Good to know	SE/SA
13.	**Acid-Base balance (2 Hours)** **13.1.** Buffer systems of the body. **13.2.** Role of lungs and kidneys in acid base balance **13.3.** Acid base imbalance	Must know	LE/SE/SA
14.	**Water balance (1 Hour)** **14.1.** Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst centre	Must know	LE/SE/SA
15.	**Electrolyte balance (1 Hour)** **15.1.** Osmolarity. Distribution of electrolytes **15.2.** Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF 15.	Good to know	SE/SA

16.	**Vitamins (3 Hours)** **16.1.** Definition, classification according to solubility, **16.2.** Individual vitamins – chemistry, sources, coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity	Must know	LE/SE/SA
17.	**Mineral Metabolism (2 Hours)** **17.1.** Introduction and classification of minerals **17.2.** Sources, RDA, digestion, absorption, transport, excretion, functions, disorder of individual minerals - calcium, phosphate and iron	Must know	LE/SE/SA
18.	**Hormone Action (2 Hours)** 18.1. Definition, classification, Mechanism of hormone action. Receptors, signal transduction, second messengers and cell function.	Good to know	SE/SA
19.	**Nutrition (6 Hours)** **19.1.** Introduction, Importance of nutrition, calorific values. **19.2.** Respiratory quotient – Definition, and its significance **19.3.** Energy requirement of a person **19.3.1.** Basal metabolic rate: Definition, Normal values, factor affecting BMR **19.3.2.** Special dynamic action of food **19.3.3.** Physical activities - Energy expenditure for various activities. Calculation of energy requirement of a person **19.3.4.** Role of carbohydrates in diet (including dietary fibers) **19.3.5.** Role of lipids in diet **19.3.6.** Role of proteins in diet (including nitrogen balance and quality of food proteins – biological value, net protein utilization) **19.3.7.** Balanced diet **19.3.8.** Protein energy malnutrition	Good to know	SE/SA
20.	**Clinical Biochemistry (1 Hour)** **20.1.** Normal levels in blood and clinical significance of glucose, urea, uric acid,	Good to know	SE/SA

		creatinine, calcium, phosphates, pH, bicarbonate and electrolytes (sodium, potassium and chloride).		

Note: LE=Long essay, SE=Short Essay, SA=Short Answer

QUESTION PAPER PATTERN:

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay	03	02	10	20	150 minutes
Short Essay	07	05	04	20	
Short answer	12	10	02	20	
			Total	**60**	

Recommended Textbooks:

1. Harper HA, Murray RK. Harper's biochemistry. New York: Mcgraw-Hill; 2000
2. Vasudevan DM, S Sreekumari, Kannan Vaidyanathan. Textbook of biochemistry for medical students. New Delhi: Jaypee Brothers Medical Publishers; 2019.
3. Beena V Shetty, Nandini M, VinithaRamanath Pai. Biochemistry for Physiotherapy and Allied Health Science students. JAPEE publishers.2008
4. Prasad R M.R M's Physiotherapy Text book series. Text Book of Biochemistry for Bachelor of Physiotherapy. RM Publications, Mangalore.
5. Devlin TM, Textbook of Biochemistry with Clinical Correlations. Wiley-Liss
6. David L. Nelson, Michael M. Cox Lehninger Principles of Biochemistry, Fourth Edition
7. J M Orten, O M Neuhaus. Human Biochemistry, Ed. 9, Mosby, St. Louis,1975.
8. LStrayer , Biochemistry, Ed. 4, WH, Freeman & Co., Ny.1995

NAME OF THE COURSE: BASIC PRINCIPLES OF BIOMECHANICS

SEMESTER-II DURATION 7 to 12 MONTHS

Course description: Biomechanics involves the study of basic concepts of human movement, and application of various biomechanical principles in the evaluation and treatment of disorders of musculoskeletal system. Students are taught to understand the various quantitative and qualitative methods of movement. Mechanical principles of various treatment methods are studied. The course prepares the students to understand and apply the basic principles of Biomechanics while learning the

courses namely, Biomechanics and Kinesiology & Exercise therapy. This course also helps the students to understand the concept of ergonomics during therapeutic interventions.

COURSE	MAX MARKS		TOTAL MARKS	HOURSPER WEEK			CREDITS	SEE
	CIA	SEE		L	T	P		Evaluation method
Basic principles of Biomechanics	40	60	100	2	1	-	3	**Written** - 60marks

COURSE CONTENT

Unit No.	Topic	Number of hours	Level of importance	Type of questions
1	**Basic concepts in Biomechancis[14 Hours]** 1.1.Types of Motion	1	Must know	SE/SA
	1.2.Location of Motion	1	Must know	SE/SA
	1.3.Direction of Motion	1	Must know	SE/SA
	1.4. Magnitude of Motion	1	Good to know	SE/SA
	1.5. Definition of Forces		Must know	SE/SA
	1.6. Force of Gravity	1	Must know	LE/SE/SA
	1.7. Reaction forces	1	Must know	SE/SA
	1.8. Equilibrium	1	Must know	SE/SA
	1.9. Objects in Motion	1	Must know	SE/SA
	1.10 Force of friction	1	Must know	SE/SA
	1.11 Concurrent force systems	1	Must know	LE/SE/SA
	1.12 Parallel force system	1	Must know	LE/SE/SA
	1.13 Work	1	Must know	SE/SA
	1.14 Moment arm of force		Must know	LE/SE/SA
	1.15 Force components	1	Must know	LE/SE/SA
	1.16 Equilibrium of levers	1	Nice to know	SA
2	**Joint and function [10Hours]** 2.1.Joint design		Must know	SE/SA
	2.2.Materials used in human joints	1	Must know	SE/SA
	2.3. General properties of connective tissues	2	Must know	LE/SE/SA
	2.4. Human joint design	1	Must know	LE/SE
	2.5. Joint function	3	Must know	LE/SE/SA
	2.6. Joint motion		Must know	LE/SE/SA
	2.7. General effects of disease, injury and immobilization	3	Must know	LE/SE
	Muscle structure and function[10Hours]		Must know	LE/SE/SA

3	3.1.Mobility and stability functions of muscles	2		
	3.2.Elements of muscle structure	3	Must know	SE/SA
	3.3.Muscle function	4	Must know	LE/SE/SA
	3.4. Effects of immobilization, injury and aging	1	Must know	SE/SA
4	**Biomechanics of the Thorax and Chest wall - [8 Hours]** 4.1 General structure and function	3	Must know	LE/SE
	4.2 Rib cage and the muscles associated with the rib cage	3	Must know	LE/SE/SA
	4.3 Ventilatory motions: its coordination and integration	2	Must know	SE
	4.4 Developmental aspects of structure and function	1	Must know	SE/SA
	4.5 Changes in normal structure and function I relation to pregnancy, scoliosis and COPD	1	Must know	SE/SA
55	**The Temporomandibular Joint- [3 Hours]** 5.1 General features, structure, function and dysfunction	3	Must know	LE/SE/SA

PRACTICAL:

The students shall be taught on demonstrate the following.

1. Equilibrium board, shoulder wheel, shoulder ladder, Bicycle ergometer, Parts of Suspension therapy.
2. Walking Aids/Crutches and staircase.
3. Use of Parallel Bars, CPM, stepper, treadmill, Wall Bars, Tilt Beds, Sprigs, pulleys, overhead pulley system.

Recommended Textbooks:

1. Joint Structure and Function – A comprehensive Analysis, JP Bros Medical Publishers, New Delhi.
2. Brunnstrom, Clinical Kinesiology, JP Bros Medical Publishers, Bangalore, 5th Ed 1996,1st Indian Ed 1998, Rs 250.00
3. Clinical Kinesiology for Physical Therapist Assistants, JP Bros Medical Publishers, Bangalore, 1st Indian Ed 1997, Rs 300.00

NAME OF THE COURSE: EXERCISE THERAPY-I A

(FOUNDATION CONCEPTS)

SEMESTER-II DURATION 7 to 12 MONTHS

Course description: In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE-Evaluation method
	IA	SEE		L	T	P		
EXERCISE THERAPY-IA(FOUNDATION CONCEPTS)-*IA	40	60	100	2	1	-	3	Written -60 marks
EXERCISE THERAPY-IA(FOUNDATION CONCEPTS)-*IB	40	60	100	-	-	6	3	Practical (OSPE)-40 marks Viva Voce-20 marks

Note: *IA-THEORY *IB PRACTICAL

COURSE CONTENT

Unit	Topic	No. of Teaching Hours	Level of importance	Type of questions
1.	**Foundational Concepts of Exercise Therapy** 1.1. Therapeutic Exercise: Impact on Physical Function 1.2. Definition of Therapeutic Exercise 1.3. Components of Physical Function: 1.4. Definition of Key Terms	1	Must Know	SE/SA
	1.5. Types of Therapeutic Exercise Intervention 1.6. Exercise Safety 1.7.Classification of Health Status, Functioning, and Disability—Evolution of Models and Related Terminology	1		
	1.7.1. Background and Rationale for Classification Systems 1.7.2. Models of Functioning and Disability—Past and Present	1		
	1.7.3 .Components of Functioning and Disability Models and Applications in Physical Therapy	1		

	1.8. Clinical Decision-Making			
	1.9. Evidence-Based Practice 1.10. A Patient Management Model 1.11. Strategies for Effective Exercise and Task-Specific Instruction 1.12. Adherence to Exercise	2		
2	**Methods of Testing –** **2.1.** Measurement of Joint range of motion (ROM): Definition, Normal ROM for all peripheral joints & spine, Goniometry -parts, types, principles, uses. Limitations of goniometry, Techniques for measurement of ROM for all peripheral joints.	3	Must know	LE/SE/SA
	2.2. Tests for neuromuscular efficiency 2.2.1 Electrical tests - EMG - NCV	1		
	2.2.2. Manual Muscle Testing: • Introduction to MMT, Principles & Aims, Indications &Limitations, Techniques of MMT for group & individual muscles. • Techniques of MMT for upper limb /Techniques of MMT for lower limb / Techniques of MMT for spine.	3		
	2.2.3.Anthropometric Measurements: - Muscle girth – biceps, triceps, forearm, quadriceps, calf.	1		
	2.2.4 .Static power Test 2.2.5. Dynamic power Test 2.2.6 .Endurance test 2.2.7. Speed test	1		
	2.3. Tests for sensation and Reflex testing	1		
	2.4. Pulmonary Function tests	1		
	2.5. Measurement of Limb Length: true limb length, apparent limb length, segmental limb length 2.6 Measurement of the angle of Pelvic	1		

	Inclination			
3	**Suspension Therapy** 3.1. Definition, Principles, Equipments& accessories, Indications & contraindications, Benefits of suspension therapy	1	Must know	LE/SE/SA
	3.2. Types of suspension therapy: axial,vertical and pendular.	1		
	3.3. Techniques of suspension therapy for upper limb 3.4. Techniques of suspension therapy for lower limb	1		
4	**Range of Motion** 4.1. Types of ROM Exercises.	1	Must Know	LE/SE/SA
	4.2.Indications, Goals, and Limitations of ROM - Passive ROM - Active ROM - Active-Assistive ROM	1		
	4.3. Precautions and Contraindications to ROM Exercises	1		
	4.4. Principles and Procedures for Applying ROM Techniques - Examination, Evaluation, and Treatment Planning - Patient Preparation - Application of Techniques - Application of PROM - Application of AROM	1		
	4.5. ROM Techniques - Upper Extremity - Lower Extremity - Cervical Spine - Lumbar Spine	1		
	4.6. Self-Assisted ROM 4.7. Continuous Passive Motion 4.8. ROM Through Functional Patterns	1		

5	**Resistance Exercise** **5.1 Active Movements** - Types of active movements 5.1.1. Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses 5.1.2. Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses 5.1.3. Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses	1	Must Know	LE/SE/SA
	5.2 Resisted Exercise: 5.2.1 Definitions and Guiding Principles	1		
	5.2.2. Skeletal Muscle Function and Adaptation to Resistance Exercise			
	5.2.3 Determinants of Resistance Exercise	1		
	5.2.4 Types of Resistance Exercise	1		
	5.2.5 General Principles of Resistance Training 5.2.6 Precautions for Resistance Exercise 5.2.7 Contraindications to Resistance Exercise	1		
	5.2.8 Selected Resistance Training Regime 5.2.9 Equipment for Resistance Training	1		
6	Introduction to Yoga 6.1 Asanas – Principles and elements;	2	Good to know	SE/SA
	6.2 Pranayamas – Principles, Methods and Techniques	2		
7.	Therapeutic Massage 7.1 History of massage 7.2 Classification of Massage Technique	1	Must know	LE/SE/SA
	7.3 Principles, Indications and Contraindications 7.4 Technique of Massage Manipulations	1		

	7.5 Physiological and Therapeutic Uses of Specific Manipulations	1		
8.	Aquatic Exercise 8.1 Definition of Aquatic Exercise 8.2 Goals and Indications for Aquatic Exercise 8.3 Precautions and Contraindications to Aquatic Exercise	1	Must know	SE/SA
	8.4 Properties of Water 8.5 Aquatic Temperature and Therapeutic Exercise 8.6 Pools for Aquatic Exercise	1		
	8.7 Special Equipment for Aquatic Exercise	1		
	8.8 Exercise Interventions Using an Aquatic Environment 8.8.1 Stretching Exercises 8.8.2Strengthening Exercises 8.8.3 Aerobic Conditioning	2		

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

PRACTICAL

EXERCISE THERAPY-*IB

List of Practical / Demonstrations

Students should be able to

1. Demonstrate the technique of measuring ROM using goniometry
2. Demonstrate muscle strength using the principles and technique of MMT
3. Demonstrate the techniques for muscle strengthening based on MMT grading
4. Demonstrate the techniques of massage manipulations
5. Demonstrate to apply the technique of passive movements
6. Demonstrate various techniques of Active movements
7. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles
8. Demonstrate techniques of strengthening muscles using resisted exercises
9. Demonstrate techniques for measuring limb length and body circumference.
10. Demonstrate techniques of Aquatic exercises

Unit	Topic	No. of Teaching Hours	Level of importance
1	Measurement of Joint range of motion (ROM) - Techniques for measurement of ROM for all peripheral joints.	8	Must Know
	- Techniques for measurement of ROM for spine.	2	
2	Manual Muscle Testing: Techniques of MMT for upper limb	8	
	Techniques of MMT for lower limb	8	
	Techniques of MMT for spine	4	Must know
3	Anthropometric Measurements: - Muscle girth – biceps, triceps, forearm, quadriceps, calf	1	Must know
4	Tests for sensation and Reflex testing	1	Good to know
5	Measurement of Limb Length: true limb length, apparent limb length, segmental limb length	1	Must know
6	Measurement of the angle of Pelvic Inclination	1	Good to know
7	Techniques of suspension therapy for upper limb	1	Good to know
	Techniques of suspension therapy for lower limb	1	
8	Range of Motion: Techniques of active and passive movements. - Upper limb	3	
	- Lower limb	3	Must know
	- Neck	1	
	Techniques of Active assisted movements	2	
9	Resisted exercises: - Upper limb	4	
	- Lower limb	4	Must know
	- Spine	2	
10	Therapeutic massage - Face	1	
	- Upper limb	2	Must know
	- Lower limb	1	
	- Back	1	

PATTERN OF PRACTICAL EXAMINATION:

- Practical- 40 marks
- Viva- 20 marks

QUESTION PAPER PATTERN:

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	**60**	

Recommended Textbooks:

1. Therapeutic exercise by Barbara Bandy
2. Therapeutic exercise by Carolyn Kisner
3. Principles of exercise therapy by M.Dena Gardiner
4. Practical Exercise therapy by Hollis Margaret
5. Therapeutic exercise by Sydney Litch
6. Therapeutic exercise by Hall & Brody
7. Therapeutic exercise by Basmajjian
8. Physical Rehabilitation by o'Sullivan.
9. Therapeutic massage by Sinha
10. Principles of muscle testing by Hislop.

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

NAME OF THE COURSE: KANNADA

Course: AECC (Ability Enhancement Compulsory Course)

Course Description: This meant for non-Kannada students of this Institution who come from other states & countries. Kannada a self-Instructional course aims at developing. Listening and speaking skills. These lessons are scientifically graded and they are presented in the background of socially familiar contents. Interactivity. Stimulus response is aimed through conversation and narration. The language used in these lessons is standard spoken Kannada.

COURSE	MAX MARKS		TOTAL MARKS	HOURSPER WEEK			CREDITS	SEE Evaluation method
	CIA	SEE		L	T	P		
Kannada	20	30	50	2		-	2	**Written** - 30marks

COURSE CONTENT

1. Introduction: Personal Pronounce, Possessive forms, Interrogative words.
2. Introducing each other. Personal pronouns. Possessive forms (Is it? – Yes, No type interrogative)
3. Possessive forms of nouns dubitative questions, Relative nouns.
4. Enquiring – conversation, qualitative and quantitative adjunctive.
5. Predicative forms, locative case.
6. Dative case basic numerals, use of parts of the speech “for” etc.
7. Ordinal numerals. Plural markers, colour adjectives, defective verbs.
8. Imperative. Permissive and hortative verb “iru” and corresponding negation.
9. Comparative, non-past tense, Instrumental and ablative case. Past tense, ‘d’, -‘t’, ‘k’, ‘t’, ‘D’ and ‘idh’negation, verbal noun.

10. Routine activities of a student. Present continuous tense, Perfect Tenses and negations.

11. Discussion: conditional and negative conditions.

QUESTION PAPER PATTERN

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
Constitution of India	**Essay (LE)**	07	05	04	20
	Short answers (SE)	07	05	02	10
				Total	**30**

SEMESTER-III

(12-18 months)

Sl. No	Category	Course Name	Theory Max Marks		Practical Max Marks			Total Marks
			IA	SEE	IA	P	Viva	
1	Core	**Part A:** Pathology	20	30				50
		Part B: Microbiology	20	30	--	--	--	50
2	Core	Biomechanics &Kinesiology-A	40	60		--	--	100
3	Core	Biomechanics & Kinesiology-B	--	--	40	40	20	100
4	Core	Exercise Therapy-IIA	40	60		--	--	100
5	Core	Exercise Therapy-IIB	--	--	40	40	20	100
6	AECC	Medical/ Physiotherapy Law & Ethics	20	30	--	--	--	50
7	AECC	Human rights and Gender Equity	20	30	--	--	--	50
Total			**160**	**240**	**80**	**80**	**40**	**600**

NAME OF THE COURSE: PAHOLOGY

SEMESTER- III DURATION 13 TO 18 MONTHS

Course description

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE-**Evaluation method
	IA	SEE		L	T	P		
Part A: Pathology	20	30	50	2	-	-	2	Written -30 marks
Part B: Microbiology	20	30	50	2	-	-	2	Written -30 marks
	40	60	100	4	-	-	4	60 Marks

COURSE CONTENT: PART A: PATHOLOGY

Unit	Topic	No. of Teaching Hours	Level of importance	Type of questions
1	**General Pathology** **1.1** Introduction to Pathology	1	Must know	LE/SE/SA
	1.2. Cell injuries: Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure. Reversible cell injury: Types, Sequential changes, Cellular swellings, vacuolation, Hyaline changes, Mucoid changes. - Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis. - Pathologic calcification: Dystrophic and Metastatic. Intracellular Accumulations - Fatty changes, Protein accumulations, Glycogen accumulations, Pigments - Melanin / Hemosiderin. Extra cellular accumulations: - Amyloidosis - Classification, Pathogenesis, Pathology including special stains.	2		
2	**Inflammation and Repair** 2.1 Acute inflammation: features, causes, vascular and cellular events.	1	Must know	LE/SE/SA

	Inflammatory cells and Mediators.			
	2.2 Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.	1		
	2.3 Repair, Wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing.	1		
3	**Circulatory Disturbances** 3.1 Hyperemia/Ischemia and Haemorrhage 3.2 Edema: Pathogenesis and types.	1		
	3.3 Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology 3.4 Thrombosis and Embolism: Formation, Fate and Effects.	1	Must know	LE/SE/SA
	3.5 Infarction: Types, Common sites. 3.6 Shock: Pathogenesis, types, morphologic changes.	1		
4	**Growth Disturbances and Neoplasia.** 4.1 Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia. 4.2 Precancerous lesions.	1		
	4.3 Neoplasia: Definition, classification, Biological behaviour : Benign and Malignant, Carcinoma and Sarcoma.	1		
	4.4 Malignant Neoplasia: Grades and Stages, Local & Distant spread.	1		
	4.**5.Carcinogenesis**: Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and prevention of cancer. 4.6 Benign & Malignant epithelial tumours Eg. Squamous papilloma, Squamous cell carcinoma, Malignant melanoma. Benign & Malignant mesenchymal tumours *Eg:* Fibroma, Lipoma, Neurofibroma, Fibrosarcoma, Liposarcoma, Rhabdo-myosarcoma, Teratoma.	1	Must know	LE/SE/SA

5	**Nutritional Disorders** 5.1 Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples.	1	Must know	SE/SA
6	**Genetic Disorders** • Basic concepts of genetic disorders and some common examples and congenital malformation. • Systemic pathology	1	Good to know	SE/SA
7	**Hematology** 7.1 Constituents of blood and bone marrow, Regulation of hematopoiesis. Anemia: Classification, clinical features & lab diagnosis. 7.2 Nutritional anemias: Iron deficiency anemia, Folic acid,Vit. B 12 deficiency anemia including pernicious anemia. Hemolytic Anaemias: Classification and Investigations. Hereditary hemolytic anaemias: Thalessemia, Sickle cell anemia, Spherocytosis and Enzyme deficiencies. Acquired hemolytic anaemias i.Alloimmune, Autoimmune ii.Drug induced, Microangiopathic Pancytopenia - Aplastic anemia.	2		
	7.3 Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis. Coagulopathies - (i) Inherited (ii) Acquired with lab diagnosis. 7.4 Leukocytic disorders: Leukocytosis, Leukopenis, Leukemoidreaction.	1		
	7.5 Leukemia: Classification, clinical manifestation, pathology and Diagnosis. Multiple myeloma and disproteinemias. 7.6 Blood transfusion; Grouping and cross matching, untoward reactions, transmissible infections including HIV & hepatitis, Blood-components & plasma-pheresis.	1		

8	**Respiratory System** • Pneumonia,Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases	1		
9.	**Cardiovascular Pathology** • Congenital Heart disease: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patentductus arteriosus. • Endocarditis. • Rheumatic Heart disease. • Vascular diseases: Atherosclerosis, monckeberg's medial calcification, Aneurysm and Arteritisand tumours of Blood vessels. • Ischemic heart Disease: Myocardial infarction. • Hypertension and hypertensive heart Disease.	1		
10.	**Alimentary tract** - Oral Pathology: Ulcers, leukoplakia, Carcinoma, oral cavity diseases and tumour of salivary gland & esophagus and precancerous lesions, Esophagus inflammatory, functional disorders and tumours. Stomach: Gastritis, Ulcer &Tumours. - Tumours and tumour like condition of the small and large Intestine: Polyps, carcinoid, carcinoma, Lymphoma. - Pancreatitis and pancreatic tumours : i) Exocrine, ii) Endocrine - Salivary gland tumours : Mixed, Warthin's	1		
11.	**Hepato – biliary pathology** • Jaundice Types, aetio-pathogenesis and diagnosis. • Hepatitis: Acute, Chronic, neonatal. • Alcoholic liver disease Cirrhosis: Post necrotic, Alcoholic, Metabolic and Portal hypertension Liver abscesses;	1		

	Pyogenic, parasitic and Amoebic. • Tumors of Liver			
12.	**Lymphatic System** • Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma. • Lymphadenitis - Nonspecific and granulomatous • Causes of Lymph Node enlargements. Reactive Hyperplasia, Primary Tumours - Hodgkin's andNon hodgkin's Lymphomas, Metastatic Tumours. • Causes of Splenic Enlargements.	1		
13.	**Musculoskeletal System** • Osteomyelitis, acute, chronic, tuberculous, mycetoma • Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget'sdisease. • Tumours: Classification: Benign, Malignant, Metastatic and synovial sarcoma. • Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout, Tuberculous.	2	Must know	LE/SE/SA
14.	**Endocrine pathology** • Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis. • Tumours of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary, Anaplastic. • Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla.	1	Must know	LE/SE/SA

15.	**Neuropathology** • Inflammations and Infections : TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess • Tuberculosis, Cysticercosis • CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma	1	Must know	LE/SE/SA
16.	**Dermatopathology:** Skin tumors: Squamos cell carcinoma, Basal cell carcinoma, Melanoma	1	Nice to know	SA

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

Question paper pattern:

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
PART A- Pathology	**Long Essay (LE)**	02	01	10	10
	Short Essay (SE)	07	05	04	20
				Total	**30**

Recommended Textbooks:

1. Text book of pathology: Harshmohan
2. General systemic pathology: Churchill Livingstone
3. Text book of Pathology: Robbins

NAME OF THE COURSE: MICROBIOLOGY

SEMESTER- III DURATION 13 TO 18 MONTHS

Course description

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE-**Evaluation method
	IA	SEE		L	T	P		
Part B: Microbiology	20	30	50	2	-	-	2	Written-30 marks

Course content

Unit	Topic	No. of Teaching Hours	Level of importance	Type of questions
1	**General Microbiology:** 1.1 Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate. 1.2 Normal flora of the human body.	1	Must know	LE/SE/SA
	1.3 Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections.	1		
	1.4 Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement. Structures, which are virulence, associated.	1		
	1.5. Physiology: Essentials of bacterial growth requirements. 1.6 Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection. Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.	1		
2	**Immunology** 2.1 Basic principles of immunity immunobiology: lymphoid organs and tissues.	1	Must know	LE/SE/SA
	2.2 Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.	1		
	2.3 Humoral immunity and its role in immunity Cell mediated immunity and its role in immunity.	1		
	2.4 Imunology of hypersensitivity, Measuring immune functions. Auto Immunity.	1		

3	**Bacteriology** To be considered under the following headings - Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports 3.1 Staphylococci,	2	Must know	LE/SE/SA
	3.2 Streptococci and Pneumococci,	1		
	3.3 Mycobacteria: Tuberculosis, M.leprae, atypical mycobacteria,	1		
	3.4 E coli & Salmonella.	1		
	3.5 Vibrois: V. cholerae and other medically important vibrios, Campylobacters and Helicobacters.	1		
	3.6 Pseudomonas	1		
	3.7 Bacillus anthracis,	1		
	3.8 Sporing and non-sporing anaerobes: Clostridia, Bacteroides and Fusobacteria,	1		
4	**General Virology** 4.1 General properties: Basic structure and broad classification of viruses.	1	Must know	LE/SE/SA
	4.2 Pathogenesis and pathology of viral infections.	2		
	4.3 Immunity and prophylaxis of viral diseases.	2		
	4.4 Principles of laboratory diagnosis of viral diseases.	1		
	4.5 List of commonly used antiviral agents.	1		
5	**Mycology** 5.1 General properties of fungi. 5.2 Classification based on disease: superficial, subcutaneous, deep mycosel opportunistic infections including Mycotoxins, systemic mycoses.	1	Must know	SE/SA
	5.3 General principles of fungal diagnosis, Rapid diagnosis. 5.4 Method of collection of samples. 5.5 Antifungal agents	1		
6	**Clinical/Applied Microbiology** 6.1 Streptococcal infections: Rheumatic fever and Rheumatic heart disease, 6.2 Meningitis.	1	Good to know	SE/SA

	6.3 Tuberculosis,			
	6.4 Pyrexia of unknown origin, 6.5 leprosy, 6.6 Sexually transmitted diseases, 6.7 Poliomyelitis, 6.8 Hepatitis, 6.9 Acute-respiratory infections,	1		
	6.10 Central nervous System infections,	1		
	6.11 Urinary Tract infections 6.12 Pelvic inflammatory disease, 6.13 Wound infection, 6.14 Opportunistic infections, 6. 15 HlV infection, 6.16 Malaria, 6.17 Filariasis, 6.18 Zoonotic diseases.	1		

Note- **LE**- Long Essay, **SE**=Short Essay, **SA**=Short Answers

QUESTION PAPER PATTERN:

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
PART A- Microbiology	**Long Essay (LE)**	02	01	10	10
	Short Essay (SE)	07	05	04	20
				Total	**30**

Recommended Textbooks:

1. Short text book of Medical Microbiology by Sathish Gupta
2. Text book of Microbiology by Jayaram Panicker
3. Microbiology & Parasitology by Rajeshwar Reddy
4. Text book of Microbiology by Anantha Narayanan
5. Microbiology by Baveja
6. Text book of microbiology by Chakraborthy

NAME OF THE COURSE: BIOMECHANICS AND KINESIOLOGY

SEMESTER-III DURATION 13-18 MONTHS

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE-Evaluation method
	IA	SEE		L	T	P		
Biomechanics and kinesiology –I A	40	60	100	2	1	-	3	**Written**-60 marks
Biomechanics and kinesiology –I B	40	60	100	--	--	4	2	**Practical** (OSPE)-40 marks **Viva-voce**-20 marks

Note: *IA-THEORY, I B- PRACTICAL

COURSE CONTENT

Unit No.	Topic	Number of hours	Level of importance	Type of questions
1	**Biomechanics of the vertebral column [10 hours]** 1.1 General structure and function	3	Must know	LE/SE/SA
	1.2. Cervical region -structure and function	1	Must know	LE/SE/SA
	1.3. Thoracic region-structure and function	1	Must know	SE/SA
	1.4. Lumbar region-structure and function	2	Must know	LE/SE/SA
	1.5. Sacral region-structure and function	1	Must know	SE/SA
	1.6. Muscles of the vertebral column	1	Must know	SA
	1.7. General effects of injury and aging	1	Good to know	SA
2	**Biomechanics of the peripheral joints** **2.1. Shoulder joint [8 hours]**	1	Must know	SE/SA

5	2.1.1. Sternoclavicular joint			
	2.1.2. Acromioclavicular joint	1	Must know	SE/SA
	2.1.3. Scapulothoracic joint	1	Must know	SE/SA
	2.1.4. Glenohumeral joint	3	Must know	LE/SE/SA
	2.1.5. Integrated function of the shoulder complex	1	Must know	LE/SE/SA
	2.1.6. Muscles	1	Must know	SA
	2.2. The elbow complex [5 hours]			
	2.2.1. Structure and function of humero-ulnar and humeroradial articulations	2	Must know	LE/SE/SA
	2.2.2. Structure and function of superior and inferior radioulnar joints	2	Must know	LE/SE/SA
	2.2.3. Mobility and stability of the elbow complex	1	Good to know	SE/SA
	2.2.4. Effects of age, gender, injury		Good to know	SE/SA
	2.3. Wrist and hand complex [8 hours]			
	2.3.1. Structure and function of the wrist complex	3	Must know	LE/SE/SA
	2.3.2. Structure and Function of the hand complex	3	Must know	LE/SE/SA
	2.3.3. Prehension	2	Must know	LE/SE/SA
	2.4. Hip complex [8 hours]			
	2.4.1. Structure of the hip joint	3	Must know	LE/SE/SA
	2.4.2. Function of the hip joint	3	Must know	LE/SE/SA
	2.4.3. Hip joint forces and muscle function in stance	2	Must know	LE/SE/SA
	2.4.4. Hip joint pathology		Good to	SA

			know	
	2.5. Knee complex [10 hours]			
	2.5.1. Tibiofemoral joint structure	3	Must know	LE/SE/SA
	2.5.2. Tibiofemoral joint function	3	Must know	LE/SE/SA
	2.5.3. Patellofemoral joint structure and function	3	Must know	LE/SE/SA
	2.5.4. Effects of injury and disease	1	Good to know	SA
	2.6. Ankle complex [9 hours]			
	2.6.1. Ankle joint structure and function	2	Must know	LE/SE/SA
	2.6.2. Subtalar joint structure and function	2	Must know	LE/SE/SA
	2.6.3. Transverse tarsal joint structure and function	1	Must know	SE/SA
	2.6.4. Tarsometatarsal joint structure and function	1	Must know	SE/SA
	2.6.5. Metatarsophalangeal joint structure and function	1	Must know	SE/SA
	2.6.6. Interphalangeal joints	1	Nice to know	SE
	2.6.7. Plantar arches	1	Must know	LE
	2.6.8. Muscles		Must know	SA
3.	**Posture [9 hours]** 3.1. Static and dynamic posture	1	Must know	SE/SA
	3.2. Kinematics and kinetics of posture	2	Must know	SE
	3.3. Optimal posture	1	Must know	SE/SA
	3.4. Analysis of optimal standing posture	1	Must know	LE/SE/SA
	3.5. Deviations from optimal alignment	1	Must know	SE/SA
	3.6. Analysis of sitting posture	1	Must know	SE

	3.7. Analysis of lying posture	1	Must know	SE
	3.8. Effects of age, gender, pregnancy, occupation on posture	1	Good to know	SA
4.	**Gait [9 hours]** 4.1. Definition and phases of gait	1	Must know	LE/SE/SA
	4.2. Terminologies in gait	1	Must know	LE/SE/SA
	4.3. Characteristics of normal gait	2	Must know	LE/SE/SA
	4.4. Trunk and upper extremities	2	Must know	SE
	4.5. Stair and running gait	2	Good to know	SE/SA
	4.6. Effects of age, gender, assistive devices	1	Good to know	SA

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

Practical

Unit	Topic	Number of hours	Level of importance
1	Joint movements and analysis Movements of joints of upper extremity, lower extremity and vertebral column analysis from three planes of action	10	Must know
2	Analysis of posture. Normal posture, abnormal posture, posture analysis from different planes.	15	Must know
3	Analysis of Gait Components of gait, abnormal gait and analysis of gait cycle in lateral view & anterior view	15	Must know
4	Analysis for activities of daily living (ADL) and functional activities.	20	Must know

Pattern of Practical examination:

- Practical- 40 marks
- Viva- 20 marks

Recommended Textbooks:

1. Joint Structure and Function – A comprehensive Analysis, JP Bros Medical Publishers, New Delhi.
2. Brunnstrom, Clinical Kinesiology, JP Bros Medical Publishers, Bangalore, 5th Ed 1996,1st Indian Ed 1998, Rs 250.00

3. Clinical Kinesiology for Physical Therapist Assistants, JP Bros Medical Publishers, Bangalore, 1st Indian Ed 1997, Rs 300.00

NAME OF THE COURSE: EXERCISE THERAPY-II A

SEMESTER- III DURATION 13 TO 18 MONTHS

Course description

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE-Evaluation method
	IA	SEE		L	T	P		
EXERCISE THERAPY -*IIA	40	60	100	3	1	-	4	**Written-** 60 marks
EXERCISE THERAPY -*IIB	40	60	100	-	-	6	3	**Practical-** 40 marks **Viva Voce-** 20 marks

Note: *IIA-THEORY *IIB – PRACTICAL

COURSE CONTENT

Unit No.	Topic	No. of teaching hours	Level of importance	Type of questions
1	**Proprioceptive Neuromuscular Facilitation** 1.1. Definitions & goals 1.2. Basic neurophysiologic principles of PNF: Muscular activity	1	Must Know	LE/SE/SA
	1.3. Diagonals patterns of movement: upper limb, lower limb	2		
	1.4.Procedure: components of PNF, Techniques of facilitation	1		
	1.5. Mobility: Contract relax, Hold relax, Rhythmic initiation **1.6. Strengthening:** Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization	1		
	1.7. **Stability:** Alternating isometric, rhythmic stabilization **1.8. Skill:** timing for emphasis, resisted progression **1.9. Endurance:** slow reversals, agonist reversal	1		

2	**Relaxation** 2.1. Definitions: Muscle Tone, Postural tone, Voluntary Movement	1	Must Know	SE/SA
	2.2 .Degrees of relaxation, Pathological tension in muscle, Stress mechanics 2.3. Types of stresses	1		
	2.4 .Effects of stress on the body mechanism	1		
	2.5. Indications of relaxation 2.6. Methods & techniques of relaxation, principles & uses: - General relaxation - Local relaxation - Jacobson‘s relaxation - Mitchell‘s relaxation - Additional methods.	2		
3	**Functional Re-education** 3.1. Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level	3	Good to know	SE/SA
	3.2. Sitting activities and gait	2		
	3.3. Lower limb and Upper limb activities	1		
4	**Stretching** 4.1. Definition of terms related to stretching 4.2. Tissue response towards immobilization and elongation	1	Must know	LE/SE/SA
	4.3. Determinants of stretching exercise	1		
	4.4. Effects of stretching, inhibition and relaxation procedures	1		
	4.5. Precautions and contraindications of stretching	1		
	4.6. Techniques of stretching.	2		
5	**Basics in Manual Therapy & Peripheral Joint Mobilization** 5.1 Examination of joint integrity - Contractile tissues - Non contractile tissues	1	Must Know	LE/SE/SA

	5.2. Mobility - assessment of accessory movement & End feel	1		
	5.3. Assessment of articular & extra-articular soft tissue status - Myofascial assessment - Acute & Chronic muscle hold - Tightness - Pain-original & referred	1		
	5.4.Schools of Manual Therapy: Principles, Grades, Indications and Contraindications, Effects and Uses of - Maitland, Kaltenborn, Mulligan, McKenzie, Muscle Energy Technique, Myofascial stretching, Cyriax, Neuro Dynamic Testing.	3		
	5.5. Biomechanical basis for mobilization, 5.6 .Effects of joint mobilization	1		
	5.7. Techniques of mobilization for upper limb, lower limb 5.8 .Precautions.	1		
6	**Balance** 6.1. Definition 6.2. Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output	1	Good to know	SE/SA
	6.3. Components of balance (sensory, musculoskeletal, biomechanical)	1		
	6.4. Causes of impaired balance	1		
	6.5. Examination &evaluation of impaired balance, 6.6 Activities for treating impaired balance: mode, posture, movement	2		
	6.7. Precautions & contraindications	1		
	6.8 Balance retraining	2		
7	Co-ordination Exercise 7.1. Anatomy & Physiology of cerebellum with its pathways	1	Must know	SE/SA

	7.2. Definitions: Co-ordination, Inco-ordination 7.3 .Causes for Inco-ordination	1		
	7.4. Test for co-ordination: equilibrium test, non equilibrium test	1		
	7.5. Principles of co-ordination exercise	1		
	7.6 .Frenkel‘s Exercise: uses of Frenkel‘s exercise, technique of Frenkel‘s exercise, progression, home exercise.	1		
8	**Posture** 8.1. Definition, Active and Inactive Postures, Postural Mechanism, Patterns of Posture	1	Must know	SE/SA
	8.2. Principles of re-education: corrective methods and techniques, Patient education. 8.4. Structure and Function of the Spine - Biomechanical Influences on Postural Alignment - Stability	2		
	8.5. Impaired Posture	1		
	8.6. Common Faulty Postures: - Characteristics and Impairments	2		
	8.7. Management of Impaired Posture 8.8. General Management Guidelines	2		
9	**Walking Aids** 9.1. **Types:** Crutches, Canes, Frames	1	Must know	SE/SA
	9.2. Principles and training with walking aids.	1		
10	**Individual and Group Exercises** 10.1 Advantages and Disadvantages 10.2 Organization of Group exercises	1	Good to know	SE/SA
	10.3 Recreational Activities and Sports	1		
11	**Aerobic Exercise** 11.1 Definition and key terms 11.2 Physiological response to aerobic exercise	1	Must know	LE/SE/SA

	11.3 Examination and evaluation of aerobic capacity 11.4 Determinants of an Exercise Program	1		
	11.5 The Exercise Program 11.6 Normal and abnormal response to acute aerobic exercise	1		
	11.7 Physiological changes that occur with training 11.8 Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.	1		

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

PRACTICAL

EXERCISE THERAPY-*IIB

List of Practical / Demonstrations

Students should be able to

- Demonstrate PNF techniques
- Demonstrate exercises for training co-ordination
- Demonstrate techniques for functional re- education
- Demonstrate mobilization for individual joint regions
- Demonstrate the techniques of muscle stretching
- Assess and train gait using walking aids

TOPICS

Unit	Topic	Level of importance	No. Of hours
1.	**Proprioceptive Neuromuscular Facilitation** Diagonals patterns of movement: upper limb	Must know	6
	Diagonals patterns of movement: lower limb		6
	Techniques of facilitation		8
2.	**Relaxation**	Must know	4
3.	**Functional Re-education** - Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level		5
	- Sitting activities and gait		5
	- Lower limb and Upper limb activities	Must know	5
4.	**Stretching**	Must know	8

	- Techniques of stretching-Upper limb		
	- Techniques of stretching- lower limb		8
	- Techniques of stretching- neck		6
5.	**Mobilization** of individual joint regions	Must know	20
6.	Exercises for training **Coordination – Frenkels exercise**	Must know	5
7.	Assess and train for using **walking aids**	Must know	4

PATTERN OF PRACTICAL EXAMINATION:

- Practical- 40 marks
- Viva- 20 marks

Recommended Textbooks:

1. Therapeutic exercise by Carolyn Kisner
2. Principles of exercise therapy by M. Dena Gardiner
3. Practical Exercise therapy by Hollis Margaret
4. Therapeutic exercise by Sydney Latch
5. Therapeutic exercise by Hall & Brody
6. Therapeutic massage by Sinha
7. Principles of muscle testing by Hislop.

Question paper pattern:

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	**60**	

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

NAME OF THE COURSE: MEDICAL/PHYSIOTHERAPY LAW & ETHICS

Course Description:

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURSPER WEEK**			**CREDITS**	**SEE** Evaluation method
	CIA	SEE		L	T	P		

Medical/Physiotherapy Law & Ethics	20	30	50	2		-	2	**Written** -30marks

Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice.

Medical/ Physiotherapy ethics has developed into a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside. The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice". Doctors are bound by, not just moral obligations, but also by laws and official regulations that form the legal framework to regulate medical practice. Hence, it is now a universal consensus that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum. Few of the important and relevant topics that need to focus on are as follows:

Medical ethics versus medical law - Definition - Goal - Scope

1. Introduction to Code of conduct
2. Basic principles of medical ethics – Confidentiality
3. Malpractice and negligence - Rational and irrational drug therapy
4. Autonomy and informed consent - Right of patients
5. Care of the terminally ill- Euthanasia
6. Organ transplantation
7. Medical diagnosis versus physiotherapy diagnosis.
8. Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.
9. Professional Indemnity insurance policy

10. Development of standardized protocol to avoid near miss or sentinel events

11. Obtaining an informed consent.

12. Biomedical ethical principles

13. Code of ethics for physiotherapists

14. Ethics documents for physiotherapists

15. Laws affecting physiotherapy practice

QUESTION PAPER PATTERN

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
Medical/Physiotherapy Law & Ethics	**Short Essay (SE)**	07	05	04	20
	Short answers (SA)	07	05	02	10
				Total	**30**

AECC (ABILITY ENHANCEMENT COMPULSORY COURSE)

NAME OF THE COURSE: HUMAN RIGHTS AND HUMAN RIGHTS AND GENDER EQUITY

Course Description:

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURSPER WEEK**			**CREDITS**	**SEE** Evaluation method
	CIA	SEE		L	T	P		
Human rights and Human rights and Gender Equity	20	30	50	2		-	2	**Written** - 30marks

COURSE CONTENT:

Unit	**Topic**	**Teaching hours**
1	**Human Rights** • Human Rights- Meaning • Universal declaration of Human rights	**5**

2	**Human Rights Advocacy** • Global Advocacy of human rights amnesty international and other organizations • Peoples union for Civil Liberty(PUCL) • Human Rights Commission in India • Minority Commission in India • Remedies against Violation of Human rights in India	**5**
3	**Human rights and Gender Equity** Key Concepts- Gender and sex- Masculinity and Feminity, Partriarchy- Matriarchy, Gender roles and attributes, Gender division or labour, Gender Bias, Gender Stereotypes, Need for Gender Sensitization	**5**
4	**Woman Status in India** • Important indicators- Six Ratio, Education, Health, Nutrition, Material and Infant Mortality, Work Participation rate, Political Participation.	**5**
5	**Contemporary Women's Issues** • Discrimination against Girl child • Violence against women • Problems of health and nutrition • Women's education gender bias in education • Trafficking in Women • Globalization and Impact on Women	**5**
6	**State Initiatives on Gender Issues** • Constitutional Rights of Women • Laws Pertaining to Women • The National Commission for Women	**5**

QUESTION PAPER PATTERN

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
Human rights and Gender Equity	**Short Essay (SE)**	07	05	04	20
	Short answers (SA)	07	05	02	10
				Total	**30**

Recommended Books:

1. Parvathy Appaiah,Human Rights, Human rights and Gender Equity and Environmental Studies, Shivam Books publishers, 2012.
2. Parvathy Appaiah,Human Rights, Human rights and Gender Equity and Environmental Studies, Jai Bharath Prakashan publishers, 2016.

SEMESTER IV

(19-24 MONTHS)

SEMESTER-IV (19-24 MONTHS)

Sl. No	Category	Course Name	Theory Max Marks		Practical Max Marks			Total Marks
			IA	SEE	IA	P	Viva	
1	Core	**Part-A:** Research Methodology	20	30				50
		Part-B: Biostatistics	20	30	--	--	--	50
2	Core	Pharmacology	40	60	--	--	--	100
3	Core	Electrotherapy - IA (Including Bio Physics & equipment care)	40	60				100
4	Core	Electrotherapy - IB (Including Bio Physics & equipment care)	--	--	40	40	20	100
5	Core	Electrotherapy - IIA	40	60				100
6	Core	Electrotherapy - IIB	--	--	40	40	20	100
7	SEC	Clinical Training-I	--	--	20	20	10	50
8	AECC	Environmental Studies	20	30	--	--	--	50
Total			**160**	**240**	**80**	**80**	**40**	**600**

SEMESTER- IV

(19-24 months)

Name of the courses:

- **Part A- Research methodology**
- **Part B- Biostatistics**

			Theory		Practical			Total Marks
Sl. No	**Category**	**Course Name**	**Max Marks**		**Max Marks**			
			IA	**SEE**	**IA**	**P**	**Viva**	
1	Core	**Part-A:** Research Methodology	20	30				50
		Part-B: Biostatistics	20	30	--	--	--	50
Total			**40**	**60**	--	--	--	**100**

COURSE CONTENT

Part-A: RESEARCH METHODOLOGY

Unit	Topic	No. of Teaching Hours	Level of importance	Type of questions
1	**Introduction to Research methodology:** Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research, Problems encountered by researchers in India.	3	Must know	SE
2	**Research problem:** Statement of research problem., Statement of purpose and objectives of research problem, Necessity of defining the problem	3	Must know	SE
3	**Research design:** Meaning of research design,	3	Must know	LE/SE

	Need for research design, Features for good design, Different research designs, Basic principles of research design			
4	**Sampling Design:** Criteria for selecting sampling procedure, Implications for sample design, steps in sampling design, characteristics of good sample design, Different types of sample design	3	Must know	LE/SE
5	**Measurement & scaling techniques:** Measurement in research- Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification. Important scaling techniques.	3	Must know	LE/SE
6	**Methods of data collection:** collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.	2	Must know	SE
7	Sampling fundamentals, need for sampling & some fundamental definitions, important sampling distributions.	3	Must know	SE
8	**Processing & analysis of data:** Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.	3	Must know	SE
9	**Testing of hypothesis:** What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis	4	Must know	LE/SE
10	**Computer technology:** Introduction to Computers, computer application in research, computers & researcher.	2	Must know	LE

Note: LE=Long Essay, SE=Short Essay

QUESTION PAPER PATTERN:

Maximum marks:30					
Course	Type of	Number of	Number of	Marks for	Total

	question	questions	Questions to be answered	each question	
PART A- Research methodology	**Long Essay (LE)**	02	01	10	10
	Short Essay (SE)	07	05	04	20
				Total	**30**

Recommended Textbooks:

1. Elements of Health Statistics: Rao.N.S.N
2. An introduction of Biostatistics: Sunder Rao.P.S.S.
3. Methods in Bio-Statistics 6th Edn. 1997: B.K. Mahajan
4. Biostatistics : A manual of Statistics Methods: K. Visweswara Rao
5. Elementary Statistics 1st Edn, 1990. in Medical Workers: Inderbir Singh
6. Statistics in Psychology and education: Great and Henry
7. An Introduction to Gupta C.B. Statistical Methods, 1972: Ram Prasad & Sons
8. Basic Statistics, 3rd Edn..: Simpsory G. Kaftha. P
9. Research; Principles and Methods: L Denise F. Poli & Hungler
10. Fundamentals of Research, 4th Edn.: David J. fox

NAME OF THE COURSE:

PART B- BASIC BIOSTATISTICS

Course Objectives:

1. To understand the basic concepts statistics
2. To use descriptive statistics in data analysis. Present data summary in tabular form and graphs.
3. Describe different methods of data collection and sampling techniques.
4. To be able to identify contexts and use of probability concepts that bear the most pertinence to biology.
5. To understand the concept of testing of hypothesis and errors in decision making
6. To know about bivariate and multivariate data, Measures of relationship: correlation and regression.

Course Outcome:

1. Understand the basic concepts and use of statistics in health science.
2. Able to compute the descriptive statistics and interpret.
3. Able to determine the proper method to be used in analysing data sets.
4. Able to understand basic concepts of probability and its use in biological study.
5. Understand the basic concepts in testing of hypothesis and some nonparametric test.

COURSE CONTENT

Unit No.	Topic	No. of teaching hours	Level of importance	Type of questions
1	Introduction Statistics and Health Science, Scope and limitations of Statistics.	1	Must Know	LE/SE
	Data- types and sources, Types of variables- continuous and categorical.	1		
	Fundamental scales of measurement- nominal, ordinal, ratio and scale.	1		
2	Measures of central tendency and dispersion 2.1. Measures of central tendency- Mean, median, mode, Partition values. 2.2. Measures of dispersion- range, mean deviation, variance, standard deviation, quartile deviation, Merits and demerits. 2.3. Coefficient of variation- application, skewness and kurtosis. 2.4. Graphs and diagrams for data presentation.	7	Must Know	SE
3	Probability and Probability Distributions Random experiment, counting possible outcomes- sample space, events, types of events, examples from health science. **Probability-** Definition, Probability of an event. Properties of Probability. Probability distribution and their application in health Science. - Binomial distribution - Poisson distribution - Normal distribution.	6	Good to know	SE
4	Theory of Sampling - Concept of population and sample. - Concept of sampling. Random Sampling. - Parameter and Statistics. - Simple random sampling method.	3	Must know	LE/SE

5	Testing of Hypothesis Concept of hypothesis. Tests of hypothesis, Type I and Type II error,size and power of the statistical test, level of significance, p value.Z-test, one and two sample t test, paired t test. Non-parametric Test -Chi-square test of Independence of Attributes.	5	Must Know	LE/SE
6	Correlation and Regression **Bivariate Data:** Correlation coefficient- for continuous data, assumptions, rank correlation. **Regression:** Simple linear regressions, estimation of regression coefficients, interpretation of estimated regression line, coefficient of determination.	4	Good to know	SE

Note: LE=Long Essay, SE=Short Essay

QUESTION PAPER PATTERN:

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
PART B- Basic Biostatistics	**Long Essay (LE)**	02	01	10	10
	Short Essay (SE)	07	05	04	20
				Total	**30**

Recommended books:

1) Arun Badra Kanhal, Mahajan's Methods in Biostatistics for Medical Students and Research Workers. 8th Ed. JAYPEE Brothers Medical Publishers(P) Ltd., 2016.
2) Balavendra Antonisamy Prasanna S. Premkumar, Soloman Christopher, Principles and Practices in Biostatistics. Elsevier ,2017
3) Bernard Rosner, Fundamentals of Biostatistics. 8th Ed. CENGAGE Learning;2016
4) Jerrold H.Zar Biostatistical Analysis, 5th Edition, PEARSON Education Limited, 2016.
5) K Visveswara Rao, Bio statistics a Manual of Statistical Methods for Use in Health Nutrition and Anthropology. 2nd Edition, JAYPEE, 2009.
6) Wayne W Daniel , Biostatistics A Foundation for Analysis in the Health Sciences. 7th Ed. John Wiley& Sons; 2005.

NAME OF THE COURSE: PHARMACOLOGY

Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
		IA	SEE		L	T	P	
Core	Pharmacology	40	60	100	3	-	-	3

COURSE CONTENT

Unit No.	Topic	Duration (in hours)	Level of importance	Type of questions
1	**General Pharmacology –** Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs.	4	Must know	SE/SA
	Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.	3		
2	**Autonomic Nervous system –** 2.1. General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System	3	Good to know	SA
	2.2. Cholinergic and Anti-Cholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.	3	Must know	SE/SA
3	**Cardiovascular Pharmacology –** 3.1. Drugs used in the treatment of heart failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators	3	Must know	SE/SA
	3.2. Antiarrhythmic Drugs	1	Must know	SE/SA

	3.3. **Drugs used in the treatment of vascular disease and tissue ischemia:** Vascular Disease, Hemostasis Lipid- Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease.	3	Must know	LE/SE/SA
4	**Neuropharmacology –** 4.1. **Sedative-Hypnotic Drugs:** Barbiturates, Benzodiazepines	2	Must know	SE/SA
	4.2. **Antianxiety Drugs:** Benzodiazepines, Other Anxiolytics	1	Good to know	SE/SA
	4.3. **Drugs Used in Treatment of Mood Disorders:** Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium	2	Must know	LE/SE/SA
	4.4. Antipsychotic drugs	1	Good to know	SE/SA
5	**Disorders of Movement –** 5.1. Drugs used in Treatment of Parkinson 's disease	2	Must know	LE/SE/SA
	5.2. Antiepileptic Drugs	2		
	5.3. Spasticity and Skeletal Muscle Relaxants	2		
6	**Inflammatory/Immune Diseases -** 6.1. Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactins with NSAIDs	2	Must know	LE/SE/SA
	6.2. **Glucocorticoids:** Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids	1		
	6.3. Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout	1		

	6.4. Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythematous,Scleroderma, Demyelinating Disease	2		
	6.5. Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis	1		
7	**Digestion and Metabolism -** 7.1. Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea	2	Good to know	SE
	Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic	1	Must know	SE
8	**Geriatrics -** Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension.	3	Must know	SA

Note: LE=Long Essay, SE=Short Essay,SA=Short answer

QUESTION PAPER PATTERN:

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	**60**	

Recommended Textbooks

1. Lippicott's Pharmacology.
2. Essential of Medical Phramacology by Tripathi
3. Text book of Medical Pharmacology by Padmajaudaykumar
4. Pharmacology by N.Murugesh

5. Pharmacolgy&Pharmacotherapeutics by Sadoskar.

NAME OF THE COURSE:

ELECTROTHERAPY- IA (Including Bio Physics &equipment care)-**Theory**

ELECTROTHERAPY- IB (Including Bio Physics &equipment care)-**Practical**

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE-Evaluation method
	IA	SEE		L	T	P		
Electrotherapy -IA (Including Bio Physics &Equipment Care)-Theory	40	60	100	2	1	-	3	Written -60 marks
Electrotherapy- IB (Including Bio Physics &Equipment Care)-Practical	40	60	100	-	-	6	3	Practical (OSPE)-40 marks Viva Voce-20 marks

Note: *IA-THEORY *IB PRACTICAL

COURSE CONTENT

S. No.	Topics	No. of Hours	Level of Importance	Type of questions
MODULE 1: BASIC PHYSICS -5hrs				
1	Definition and properties of matter -solids, liquids and gases	1	Good to know	SE, SA
2	Definition of adhesion, surface tension, viscosity, density and elasticity.			
3	Definition of atom, molecules, elements and compound; Explain the structure of atom			
4	Definition of Ions and electrolytes			
5	Definition and properties of Electric charge and Electric field	1	Good to know	SE, SA
6	Definition and units of Potential Difference and EMF			
7	Definition and properties of conductor, insulator and semiconductor			
8	Definition of Electrical current; Definition of Coulomb, Ampere	1	Good to know	SE, SA
9	Definition of Direct current and Alternating current			
10	Define electrical resistance/impedance and conductance; Types of electrical impedance and unit of resistance; Define Ohm's law	1	Good to know	SE, SA
11	Structure of an electrical circuit; Definition and function of switch and fuse			

12	Define capacitance; Structure and function of capacitor	1	Good to know	SE, SA
13	Definition and units of Power and Work; Definition of Joule's law			
MODULE 2: ELECTROTHERAPY- 30 hrs				
1.	**Introduction to Electrotherapy** • Definition		Nice to know	SA
2.	**Peripheral nerve and muscle physiology** • Characteristics of excitable tissues • Characteristics of membranes of excitable tissues • Resting membrane potential • Production of action potential • Propagation of action potential • All or none phenomena • Refractory period • Accommodation of excitable tissues to stimulation • Classification and characteristics of peripheral nerve fibers • Classification and characteristics of muscle fibers • Classification and characteristics of motor units • Motor unit recruitment pattern in voluntary muscle contraction • Synapse and neuromuscular junction	2	Good to know	SE, SA
3.	**Electrical Stimulation of Nerve and Muscle** • Electrically evoked action potentials • Propagation of evoked potentials • Anode break excitation • Pfluger's law • Stimulus characteristics • Accommodation to electrical stimulation • Peripheral Nerve fiber recruitment pattern in electrical stimulation • Levels of electrical stimulation • Motor unit recruitment pattern in electrical stimulation	2	Must know	LE, SE, SA

4.	**Effects of electrical stimulation on excitable tissues**
	• Biological effects
	  ○ Electrothermal effects
	  ○ Electrochemical effects
	  ○ Electrophysical effects
		2	Must know	LE, SE, SA

	• Physiological effects at
	  ○ Cellular level
	  ○ Tissue level
	  ○ Segmental level
	  ○ Systemic level
	• Physiological effects of stimulation of
	  ○ Sensory nerves
	  ○ Motor nerves/Normally innervated healthy muscles
	  ▪ Type of muscle contraction
	  ▪ Strength of Muscle Contraction
	  ▪ Effects of Muscle Contraction
	  ▪ Adaptations to prolonged, low force level activity
	  ▪ Adaptations to intermittent, high force level activity
	  ○ Denervated muscles
	  ▪ Type of muscle contraction
	  ▪ Strength of muscle contraction
	  ▪ Effects of denervated muscle contraction
	  ○ Pain fibers			

5.	**Effects of electrical stimulation in pain modulation**
	• Definition of pain
	• Purpose of pain
	• Effects of prolonged pain
	• Types of pain
	• Characteristics of pain
	• Physiology of pain
	• Pain pathway
	• Pain modulation by electrical stimulation
	  ○ Pain gate theory
	  ○ Endogenous opioid theory
	  ○ Descending pain control theory
		2	Must know	LE, SE, SA

6.	**Effects of electrical stimulation in tissue and wound healing** • Skin battery • Current of injury • Effects on inflammation • Effects on repair • Effects on remodeling • Effects on wound infection • Effects on ischemic wounds	1	Must know	LE, SE, SA

7.	**Indications and contraindications for electrical stimulating currents** • Pulsed currents and alternating currents • Constant direct current	1	Must know	LE, SE, SA
8.	**Instrumentation in NMES** • Construction • NMES controls • Electrodes	1	Good to know	SE, SA
9.	Types and Characteristics of Neuromuscular **Stimulating Currents** • Direct current • Alternating currents • Pulsed currents • Characteristics of AC and PC o Wave form/shapes o Number of phases o Symmetry of phases o Balance of phase charges • Naming of AC and PC • Characteristics of single pulse o Amplitude o Duration o Charge • Characteristics of series of pulses o Pulse interval o Frequency • Current modulation o Amplitude modulation o Duration modulation o Frequency modulation o Ramp or Surge modulation o Timing modulation o Train of pulses or AC cycles o Burst of pulses or AC cycles ▪ Burst duration ▪ Burst or Inter-burst interval ▪ Burst Frequency o Mode ▪ Continuous ▪ Pulsed	2	Good to know	SE, SA
10.	**Principles of application of electrical stimulation** • Electrode-Skin Interface o Ohmic (skin) resistance o Capacitive reactance (resistance) o Coupling media	1	Must know	SE, SA

	○ Electrode size ○ Interelectrode distance			
11.	**Dangers of Electrical Stimulation** • Electric shock • Macro shock ○ Causes ○ Effects ○ Prevention • Micro shock ○ Causes ○ Effects ○ Prevention • First aid and management • Electrochemical burn • Skin irritation • Safe clinical use of electrical stimulation	1	Must know	SE, SA
12.	**Technique of electrical stimulation** • Introduction to patient • Review of case records • Informed Consent • Preparation of equipment ○ Skin resistance lowering tray ○ Treatment Tray • Checking equipment • Self-testing • Positioning the patient • Checking for Contraindications • Reducing the skin resistance • Application of Electrodes • Instructions to patient • Treatment parameters • Documentation	1	Must know	LE, SE, SA
13.	**Therapeutic electrical currents** • Definition • Current parameters • Current modifications • Physiological effects • Indications • Contraindications • Dangers • Technique of treatment Of the following currents			

	• Faradic and Faradic type currents • Interrupted direct or galvanic currents • Transcutaneous Electrical Nerve Stimulation (TENS)	6	Must know	LE, SE, SA
	• Sinusoidal currents • Diadynamic Currents • High voltage pulsed galvanic stimulation currents • Electro Acupuncture • Microcurrents (MENS) • Constant direct or Galvanic current • Rebox • Russian currents	2	Good to know	SE, SA

14.	**Interferential therapy currents**
	• Definition
	• Production
	  ○ Constructive interference of waves
	  ○ Destructive interference of waves
	  ○ Amplitude modulation of currents (Beat frequency)
	• Two circuit IFC
	  ○ Constant vs variable beat frequency
	  ○ Static interference field
	  ○ Dynamic or scanning interference field
	  ○ Premodulated IFC
	• Three circuit IFC or Sterodynamic interference field
	• Physiological effects
	  ○ Cutaneous and subcutaneous stimulation
	  ○ Asynchronous recruitment of motor units
	• Indications
	• Contraindications
	• Dangers
	• Technique of application
		2	Must know	LE, SE, SA

15.	**Iontophoresis** • Definition • Theoretical Basis • Current Parameters • Physiological Effects	2	Must to know	LE, SE, SA

	• Commonly administered medications • Contraindications • Technique of Treatment			
16.	**Functional electrical stimulation** • Introduction • FES for dorsiflexion assist during gait • FES for scoliosis management • FES for shoulder subluxation • FES for standing and gait	1	Good to know	SE, SA
MODULE 3: ELECTRODIAGNOSIS-10 hrs				
1.	**Basics of peripheral nerve injuries** • Types • Causes • Pathology • Signs and symptoms • Prognosis	1	Good to know	SE, SA
2.	**Faradic-Galvanic test** • Procedure • Interpretation • Drawbacks • Uses	3	Good to know	SE, SA

3.	**Strength-Duration curve test**
	• Definition
	• Uses
	• Contraindications
	• Equipment
	• Current parameters
	• Technique
	• Interpretation
	  ○ Normal innervation
	  ○ Complete denervation
	  ○ Partial denervation
	  ○ Rheobase
	  ○ Chronaxie
	  ○ Pulse ratio
			Must know	LE, SE, SA

4.	**Instrumentation in electroneuromyography**
	• Recording equipment
	  ○ Electrodes
	  ▪ Surface
	  ▪ Needle
	  ○ Signal processor
	  ▪ Amplifier
	  ▪ Filter
	  ▪ Analog to digital converter
		1	Good to know	SE, SA

	• Stimulating equipment
	  ○ Current parameters
	  ○ Electrodes
	  ▪ Hand held bipolar electrodes
	  ▪ Ring or loop electrodes
	  ▪ Needle electrodes
	• Displayer			

5.	**Nerve conduction velocity studies**
	• Purpose
	• Uses
	• General technique of measuring NCV
	  ○ Peripheral motor nerves
	  ○ Peripheral sensory nerves
	  ▪ Stimulation of nerves
	  ▪ Recording of signals
	  ▪ Display of signals
	  ▪ Calculation of NCV
		2	Good to know	SE, SA

6.	**Electromyography**
	• Definition
	• Uses of EMG
	• Recording equipment
	• Recording technique
	• Types of recorded EMG
	  ○ Insertional activity
	  ○ Activity at rest
	  ○ Activity on minimal activation and recruitment of motor unit
	  ○ Activity during maximal activation and recruitment of motor unit
		2	Good to know	SE, SA

7.	**EMG Biofeedback** • Definition • Indications • Technique • Therapeutic uses	1	Good to know	SE, SA

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

QUESTION PAPER PATTERN:

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	

Short answers (SA)	12	10	02	20	
			Total	**60**	

COURSE NAME: ELECTROTHERAPY- IB

(Including Bio Physics &equipment care)

PRACTICAL

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

1. Demonstrate the technique for patient assessment and treatment plan
    - Receiving the patient
    - Review of case records
    - Informed consent
2. Collection of materials required for treatment using electrotherapy modalities
3. Checking the apparatus and self-testing
4. Positioning the patient for treatment using electrotherapy
5. Checking for sensations and contraindications
6. Skin resistance lowering
7. Demonstrate placement of electrodes for various electrotherapy modalities
    - Motor point stimulation
    - Nerve trunk stimulation
    - Denervated muscle stimulation
    - Faradism under pressure for UL and LL
    - Faradic foot bath
    - Pain modulation
        - TENS
        - IFT
8. Patient safety instructions
9. Setting treatment parameters
10. Plotting of SD curve with chronaxie and rheobase
11. Demonstrate FG test
12. Winding up procedure after any electrotherapy treatment method
13. Documentation

PATTERN OF PRACTICAL EXAMINATION:

- Practical- 60 marks
- Viva- 40 marks

Recommended books:

1. **C**laytons Electrotherapy by Forster & Plastangs

2. Electrotherapy Explained by Low & Reed

3. Clinical Electrotherapy by Nelson

4. Electrotherapy Evidene based practice by Sheila Kitchen

5. Physical agents by Michile Cameroon

6. Principles of Electrotherapy by Michile Camreeon

7. Thermal agents by Susan Michlovitz

NAME OF THE COURSE: ELECTROTHERAPY -IIA

SEMESTER-IV DURATION 19 to 24 MONTHS

Course Description

Course Name	Max Marks		Total Marks	Hours per week			Credits	SEE-Evaluation method
	IA	SEE		L	T	P		
Electrotherapy -*IIA	40	60	100	2	1	-	3	Written -60 marks
Electrotherapy -* IIB	40	60	100	-	-	4	2	**Practical** - 60 marks **Viva Voce**- 40 marks

Note: *IIA-THEORY *IIB PRACTICAL

COURSE CONTENT

Unit No.	Topic	Hours	Level of importance	Type of questions
1	**THERMO &ACTINOTHERAPY (HIGH FREQUENCY CURRENTS)**			
	1.1. Electro Magnetic Spectrum.	1	Must know	SA
	1.2. SWD:	6	Must know	LE/SE/SA

	1.2.1. Define short wave, Frequency & Wavelength of SWD. 1.2.2. Principle of Production 1.2.3. Circuit diagram & Production of SWD 1.2.4. Methods of Heat Production by SWD treatment 1.2.5. Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus 1.2.6. Physiological & Therapeutic effects 1.2.7. Indications & Contraindications, Dangers, Dosage parameters			
	1.3. Pulsed Electro Magnetic Energy (PEME): 1.3.1. Principles 1.3.2. . Production & Parameters of PEME 1.3.3. Uses of PEME	1	Must Know	SE/SA
	1.4. Microwave Diathermy (MWD) 1.4.1. Definition, Wave length & Frequency. 1.4.2. Production of MWD 1.4.3. Applicators, Dosage Parameters, 1.4.4. Physiological & Therapeutic effects 1..4.5. . Indications & Contraindications, Dangers of MWD	3	Must Know	LE/SE/SA
	1.5. Ultrasound 1.5.1. Define Ultrasound, Frequency 1.5.2. Piezo Electric effects: Direct, Reverse, 1.5.3. Production of US. 1.5.4.**Treatment Dosage parameters:** Continuous& Pulsed mode Intensity, US	4	Must Know	LE/SE/SA

	Fields: Near field, Far field, Half value distance, Attenuation, Coupling Media, Thermal effects, Non-thermal effects, 1.5.5. **Principles & Application of US:** Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. 1.5.6.Uses of US, Indications & Contraindications, Dangers of Ultrasound. 1.5.7. Phonophoresis 1.5.8. Methods of application, commonly used drugs, Uses. Dosages of US.			
	1.6. Infra Red Radiation (IRR) 1.6.1. Define IRR, wavelength& parameters 1.6.2. Types of IR generators, 1.6.3. Production of IR 1.6.4. Physiological & Therapeutic effects 1.6.5. Duration & frequency of treatment 1.6.6. Indication & Contraindications UVR 1.6.7. Types of UVR, and UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel, PUVA apparatus. 1.6.8. Physiological & Therapeutic effects.	4	Must Know	LE/SE/SA
	1.7. Ultra Violet Radiation (UVR): 1.7.1. Define Sentizers & Filters. 1.7.2. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. 1.7.3. Dangers. 1.7.4. Dosages for different therapeutic effects, Distance in UVR lamp	6	Must Know	LE/SE/SA

	1.8. LASER: 1.8.1. Define LASER. 1.8.2. Types of LASER. 1.8.3. Principles of Production. 1.8.4. Production of LASER by various methods. 1.8.5. Methods of application of LASER. 1.8.6 Dosage of LASER. 1.8.6. Physiological & Therapeutic effects of LASER. 1.8.7. Safety precautions of LASER. 1.8.8.Classifications of LASER. Energy density & power density	4	Must Know	LE/SE/SA
2	**SUPERFICIAL HEATING MODALITIES**			
	2.1. Wax Therapy 2.1.1. Definition and Principle of Wax Therapy 2.1.2. Application – latent Heat, Composition of Wax Bath Therapy unit 2.1.3. Methods of application of Wax 2.1.4. Physiological & Therapeutic effects, 2.1.5. Indications & Contraindication, Dangers	2	Good to know	LE/SE/SA
	2.2. Contrast Bath 2.2.1. Methods of application 2.2.2. Therapeutic uses 2.2.3. Indications & Contraindications	2	Good to know	SE/SA
	2.3. Moist Heat Therapy 2.3.1. Hydro collator packs – in brief	2	Good to know	LE/SE/SA

	2.3.2. Methods of applications, 2.3.3. Therapeutic uses 2.3.4. Indications & Contraindications			
	2.4. Cyclotherm 2.4.1. Principles of production 2.4.2. Therapeutic uses 2.4.3. Indications & Contraindications	2	Good to know	SE/SA
	2.5. Fluidotherapy 2.5.1. Construction 2.5.2. Method of application 2.5.3. Therapeutic uses 2.5.4. Indications &Contraindications.	2	Good to know	SE/SA
	2.6. Whirl Pool Bath 2.6.1. Construction 2.6.2. Method of Application 2.6.3. Therapeutic Uses 2.6.4 Indications &Contraindications.	2	Good to know	SE/SA
	2.7. Magnetic Stimulation 2.7.1. Principles 2.7.2. Therapeutic uses 2.7.3. Indications & contraindication.	2	Nice to know	SE/SA
	2.8. Cryotherapy 2.8.1. Define- Cryotherapy 2.8.2. Principle- Latent heat of fusion 2.8.3. Physiological &Therapeutics effects, 2.8.4. Techniques of Applications	2	Must know	SE/SA

	2.8.5. Indications & Contraindications, 2.8.6. Dangers 2.8.7. Methods of application with dosages.			

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

QUESTION PAPER PATTERN (THEORY)

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	**60**	

NAME OF THE COURSE: ELECTROTHERAPY –IIB PRACTICAL

List of Practical / Demonstrations

Students should be able to:

1. Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.
2. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
3. Demonstrate placement of electrodes for various electrotherapy modalities
4. Application of Ultrasound for different regions-various methods of application
5. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
6. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose
7. Demonstrate treatment method using IFT for various regions
8. Calculation of dosage and technique of application of LASER
9. Technique of treatment and application of Hydro collator packs, cryotherapy, contrast bath, wax therapy
10. Demonstrate the treatment method using whirl pool bath
11. Winding up procedure after any electrotherapy treatment method

Equipment care -

1. Checking of equipments
2. Arrangement of exercise therapy and electro therapy equipment.
3. Calibration of equipment
4. Purchase, billing, document of equipment.
5. Safety handling of equipments.
6. Research lab equipment maintenance.
7. Stock register, movement register maintenance

Unit No.	Topic	Hours	Level of importance
1	**THERMO &ACTINOTHERAPY (HIGH FREQUENCY CURRENTS)**		
	1.1. Short Wave Diathermy (SWD) • Electrode, Placement & Spacing of Electrodes, Tuning • Testing of SWD Apparatus, • Indications& Contraindications • Dangers, Dosage parameters	10	Must Know
	1.2. Micro Wave Diathermy (MWD) • Application, Dosage Parameters • Indications & Contraindications • Dangers of MWD	4	Must Know
	1.3Ultrasound • Treatment Dosage parameters: Continuous& Pulsed mode Intensity • Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. • Uses of US, Indications & Contraindications, Dangers • Methods of application of Phonophoresis, commonly used drugs • Uses. Dosages of US.	8	Must Know
	1.4. Infra Red Radiation (IRR) • Duration & frequency of treatment • Indication &Contraindications UVR • Techniques.	6	Must Know
	1.5. Ultra Violet radiation (UVR) ▪ Test dosage calculation ▪ Calculation of E1, E2, E3, E4 doses. ▪ Indications, contraindications ▪ Dangers. Dosages for different therapeutic effects, Distance in UVR lamp ▪ Techniques	10	Must Know
	1.6. LASER • Methods of application of LASER. • Dosage of LASER. • Safety precautions of LASER.	4	Must Know
2	**SUPERFICIAL HEATING MODALITIES**		

	2.1. Wax Therapy • Composition of Wax Bath Therapy unit, • Methods of application of Wax • Indications & Contraindication, Dangers	3	Must Know
	2.2. Contrast Bath • Methods of application • Indications & Contraindications	2	Must Know
	2.3. Moist Heat Therapy • Hydro collator Methods of applications • Indications & Contraindications	3	Must Know
	2.4. Cyclotherm • Techniques, Indications & Contraindications	2	Must Know
	2.5. Fluidotherapy • Method of application • Indications &Contraindications.	2	Must Know
	2.6. Whirl Pool Bath • Method of Application, • Uses, Indications &Contraindications.	2	Must Know
	2.7. Magnetic Stimulation • Techniques • Uses • Indications & contraindication.	2	Must Know
	2.8. Cryotherapy: • Principle- Latent heat of fusion. • Techniques of Applications • Indications & Contraindications, • Dangers • Methods of application with dosages.	2	Must Know

PATTERN OF PRACTICAL EXAMINATION:

- Practical- 60 marks
- Viva- 40 marks

Recommended books:

1. **C**laytons Electrotherapy by Forster & Plastangs

2. Electrotherapy Explained by Low & Reed

3. Clinical Electrotherapy by Nelson

4. Electrotherapy Evidene based practice by Sheila Kitchen

5. Physical agents by Michile Cameroon

6. Principles of Electrotherapy by MichileCamreeon

7. Thermal agents by Susan Michlovitz

SKILL ENHANCEMENT COURSE
CLINICAL TRAINING-I

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE Evaluation method
	CIA	SEE		L	T	P		
Clinical training-**I**	20	30	50	-		6	2	**Practical**-20marks **Viva**-10 marks

Course description: This course is designed to enhance the clinical skills of the students. The course will continue till 8th Semester with progressive skill enhancement in clinical and patient handling. There will be continuous monitoring of the students through prescribed format. At the end of the course student will appear for the University examination.

Clinical training I will focus on Communication, Professionalism, assessment technique and handling skills.

INTERNAL ASSESSMENT:

Student should submit a portfolio on

1. **SIX** reports on information gathered from their communication with patients and information retrieved from the patients report **(Appendix I)**
2. Logged knowledge and skills form **(Appendix II)**

FINAL ASSESSMENT: ((SEE)

The students in this clinical training will be assessed based on the Clinical assessment form **(Appendix III)**

Students will be assessed on 4 areas

I. Communication
II. Professionalism
III. The skill in performing individual assessment technique and the handling skill
IV. The skill in performing individual treatment technique and the handling skill

V. Documentation

DISTRIBUTION OF ASSESSMENT MARKS

Internal Assessment - Portfolio (40%)

Final Assessment (SEE)- Clinical Assessment (60%)

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

NAME OF THE COURSE: ENVIRONMENTAL STUDIES

Course Description:

COURSE	MAX MARKS		TOTAL MARKS	HOURSPER WEEK			CREDITS	SEE Evaluation method
	CIA	SEE		L	T	P		
Environmental studies	20	30	50	2		-	2	**Written** - 30marks

UGC-recommended syllabus.

Course content

Unit	Topic	Total teaching hours
1	**Multidisciplinary nature of environmental studies** Definition, scope and importance, need for public awareness.	2
2	**Unit 2: Natural Resources: Renewable and non-renewable resources:** Natural resources and associated problems. • Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.	7

	• Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. • Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. • Food resources: World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. • Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies. • Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.	
3	**Ecosystems** • Concept of an ecosystem. • Structure and function of an ecosystem. • Producers, consumers and decomposers. • Energy flow in the ecosystem. • Ecological succession. • Food chains, food webs and ecological pyramids. • Introduction, types, characteristic features, structure and function of the following ecosystems:- a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	**4**
4	**Unit 4: Biodiversity and its conservation** • **Introduction** – Definition: genetic, species and ecosystem diversity. • Biogeographical classification of India • Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option • values • Biodiversity at global, National and local levels. • Inida 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	**8**

	• Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.	
5	**Unit 5: Environmental Pollution** Definition • Cause, effects and control measures of:- a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards • Solid waste Management: Causes, effects and control measures of urban and industrial wastes. • Role of an individual in prevention of pollution. • Pollution case studies. • Disaster management: floods, earthquake, cyclone and landslides.	**7**
6	**Field work** • Visit to a local area to document environmental assets river/ forest/grassland/hill/mountain • Visit to a local polluted site-Urban/Rural/Industrial/Agricultural • Study of common plants, insects, birds. • Study of simple ecosystems-pond, river, hill slopes, etc.	**2**

QUESTION PAPER PATTERN

Maximum marks:30					
Course	Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total
Environmental studies	**Short Essay (SE)**	07	05	04	20
	Short answers (SA)	07	05	02	10
				Total	**30**

Recommended Books:

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
2. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
3. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)

4. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
5. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
6. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
7. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
8. Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.

SEMESTER V

(25-30 months)

Sl. No	Category	Course Name	Max Marks					Total Marks
			Theory		Practical			
			IA	SEE	IA	P	Viva	
1	Core	Musculoskeletal Conditions for Physiotherapists	40	60	--	--	--	100
2	Core	General Medical &Paediatric Conditions for Physiotherapists	40	60	--	--	--	100
3	Core	Surgical Conditions for Physiotherapists	40	60	--	--	--	100

4	Core	Clinical Neurology for Physiotherapists	40	60	--	--	--	100
5	Core	Cardiovascular & Pulmonary Conditions for Physiotherapists	40	60	--	--	--	100
6	SEC	Clinical Training-II	--	--	20	20	10	50
Total			**200**	**300**	**20**	**20**	**10**	**550**

SEMESTER V

(25-30 months)

Name of the course: Musculoskeletal conditions for Physiotherapists.

Course Name	**Max Marks**		**Total Marks**	**Hours per week**			**Credits**	**SEE-Evaluation method**
	IA	SEE		L	T	P		
Musculoskeletal conditions for Physiotherapists.	40	60	100	4	-	-	4	Written -60 marks

Course content

Unit No.	Topic	Hours	Level of importance	Type of questions
1.	**Introduction** 1.1.Introduction to Orthopaedics. Clinical examination of	**3**	Good to know	SE/SA

	an Orthopaedic patient. 1.2 Common investigative procedures including, Radiological and Imaging techniques in Orthopaedics. 1.3 Inflammation and repair, soft tissue healing.			
2.	**Traumatology** 2.1.Fracture: definition, types, signs and symptoms. Fracture healing. 2.2.Complications of fractures. 2.3.Conservative and surgical approaches, Indications & contraindications. 2.4.Principles of management–reduction (open/closed), immobilization etc. 2.5.Sublimation/dislocations– definition, signs and symptoms, management (conservative and surgical).	**3**	Must know	LE/SE/SA
3.	**Fractures and Dislocations of Upper Limb** **3.1. Fractures of Upper Limb -** causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: 3.1.1. Clavicle and Scapula. 3.1.2. Greater tuberosity and neck of Humerus, Shaft of Humerus, Supracondyle of humerus. 3.1.3. Capitulum, radial head, olecranon, coronoid, and epicondyles, side swipe injury of elbow. 3.1.4. Ulna and Radius. Forearm – monteggia, Galeazzi fracture 3.1.5. Wrist- Chauffeur fracture. Colle's fracture, Smith's fracture, Scaphoid fracture, Fracture of the metacarpals, Bennett's fracture, Phalanges. (Proximal and middle.) **3.2. Dislocations of Upper Limb** 3.2.1. Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (Putti Plat, Bankart's) etc. 3.2.1. Recurrent dislocation of shoulder. 3.2.2. Posterior dislocation of shoulder –	**6**	Must know	LE/SE/SA

	mechanism of injury, clinical features and management. 3.2.3. Posterior dislocation of elbow – mechanism of injury, clinical feature, complications & management.			
4.	**Fracture of Spine** 4.1.Cervical Spine - Mechanism of injury, clinical feature, complications (quadriplegia); Management-immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia). Clay shoveller's fracture. Hangman's fracture. Fracture odontoid. Fracture of atlas. 4.2.Thoracic and Lumbar Regions - Mechanism of injury, clinical features, and management—conservative and surgical of common fractures around thoracic and lumbar regions. Fracture of coccyx. 4.3.Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.	**4**	Must know	LE/SE/SA
5.	**Fractures & Dislocations of Lower Limb** **5.1. Fractures of Lower limb:** Causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures: 5.1.1. Pelvis & femur – Fractures of trochanters. 5.1.2. Fracture shaft femur—clinical features, mechanism of injury, complications, management-conservative and surgical, Supracondylar fracture of femur, of the condyles of femur. 5.1.3. Patella. 5.1.4. Tibia- tibial condyles of tibia and fibula, Dupuytren's fracture Maisonneuve's fracture,Pott's fracture- mechanism of injury, management , Bimalleolar fracture Trimalleolar fracture. 5.1.5. Calcaneum-mechanism of injury, complications and management, Talus, Fracture of metatarsals-stress fractures jone's fracture.	**5**	Must know	LE/SE/SA

	5.1.6. Fracture of phalanges. **5.2. Dislocations of Lower Limb** - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. 5.2.1. Hip-Anterior dislocation , Posterior dislocation, Central dislocation. 5.2.2. Dislocation of patella. Recurrent dislocation of patella.			
6.	**Soft Tissue Injuries** 6.1.Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. 6.2.Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: 6.2.1. Knee- Menisci, Cruciate ligament injuries Medial and lateral collateral injuries. 6.2.2. Ankle-Lateral,Medial,Anterior ligament 6.2.3. Wrist sprains. 6.2.4. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. 6.2.5. Contusions- quadriceps, gluteal, calf, deltoid etc. 6.2.6. Tendon Ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.	**3**	Must know	LE/SE/SA
7.	**Wrist &Hand** 7.1.Mechanism of injury, clinical features, and management of the following – 7.1.1. Crush injuries. 7.1.2. Flexor and extensor injuries. 7.1.3. Burn injuries of hand.	**3**	Must know	LE/SE/SA
8.	**Amputations** 8.1.Definition, levels of amputation of both lower and upper limbs, indications, complications.	**2**	Must know	LE/SE/SA
9.	**Traumatic Spinal Cord Injuries**	**2**	Must	LE/SE/S

	9.1.Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.		know	A
10.	**Deformities** 10.1. Clinical features, Complications, Medical and surgical management of the following Congenital and Acquired deformities. 10.2. Congenital Deformities - CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. 10.3. Hand anomalies - Syndactyly, Polydactyly and Ectrodactyly. Arthrogryposis Multiple Congenital (Amyoplasia Congenita). 10.4. Limb deficiencies- Amelia and Phocomelia. Klippel-feil syndrome. Osteogenesis imperfecta (fragile ossium). Cervical Rib. 10.5. Acquired Deformities - Acquired Torticollis, Scoliosis, Kyphosis, Lordosis, Genu varum, Genu valgum, Genu recurvatum, Coxa vara, Pes cavus, Hallux rigidus, Hallux valgus, Hammertoe, Metatarsalgia.	**6**	Must know	SE/SA
11.	**Disease of Bones & Joints** : Causes, Clinical features, Complications, Management- medical and surgical of the following conditions: 11.1.1 . Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc. 11.1.2 . Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilitic infection of joints. 11.1.3 .Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors : Osteoma. Osteosarcoma, Osteochondroma. Enchondroma. Ewing's sarcoma. Gaint cell tumor. Multiple myeloma. Metastatic tumors. 11.1.4 .Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis. 11.1.5 .Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis.	**4**	Must know	LE/SE/SA
12.	**Inflammatory & Degenerative Conditions**	**4**	Must	SE/SA

	12.1. Causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions: 12.1.1. Osteoarthritis. 12.1.2. Rheumatoid arthritis. 12.1.3. Ankylosing spondylitis. 12.1.4. Gouty arthritis. 12.1.5. Psoriatic arthritis. 12.1.6. Hemophilic arthritis. 12.1.7. Still's disease (juvenile rheumatoid arthritis). 12.1.8. Charcot's joints. 12.1.9. Connective Tissue Disorders- Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis. 12.1.10. Mixed connective tissue Disease (MCTD).		know	
13.	**Syndromes** 13.1 Causes, Clinical features, complications, management- conservative and surgical of the following 13.1.1 . Cervico brachial syndrome. 13.1.2 . Thoracic outlet syndrome. 13.1.3 . Vertebro - basilar syndrome. 13.1.4 . Scalenus syndrome. 13.1.5 . Costo clavicular syndrome. 13.1.6 . Levator scapulae syndrome. 13.1.7 . Piriformis syndrome.	**3**	Must know	SE/SA
14.	**Neuromuscular Disorders** 14.1. Definition, causes, clinical features, complications, management., medical and surgical of the following conditions: 14.1.1. Cerebral palsy. 14.1.2. Poliomyelitis. 14.1.3. Spinal Dysraphism. 14.1.4. Leprosy.	**3**	Must know	LE/SE/SA
15.	**Spine Pathology**	**3**	Must	

	15.1. Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following: 15.1.1. Prolapsed intervertebral disc (PID). 15.1.2. Spinal Canal Stenosis. 15.1.3. Spondylosis (cervical and lumbar). 15.1.4. Spondylolysis. 15.1.5. Spondylolisthesis. 15.1.6.. Lumbago/ Lumbosacral strain. 15.1.7. Sacralisation. 15.1.8. Lumbarisation. 15.1.9. Coccydynia. 15.1.10. Hemi vertebra.		know	LE/SE/SA
16.	**Orthopedic Surgeries** 16.1 Indications, Classification, Types, Principles of management of the following Surgeries. 16.1.1 . Arthrodesis. 16.1.2. Arthroplasty (partial and total replacement). 16.1.3. Osteotomy. 16.1.4. External fixators. 16.1.5. Spinal stabilization surgeries (Harrington's, Luque's, Steffi plating) etc, Limb reattachments.	**3**	Must know	LE/SE/
17.	**Regional Conditions** 17.1. Definition, Clinical features and management of the following regional conditions. 17.1.1. Shoulder: Periarthritis shoulder (adhesive capsulitis), Rotator cuff tendinitis, Supraspinatus Tendinitis, Infraspinatus Tendinitis, Bicipital Tendinitis, Subacromial Bursitis. 17.1.2. Elbow: Tennis Elbow, Golfer's Elbow, Olecranon Bursitis (student's elbow). Triceps Tendinitis. 17.1.3. Wrist and Hand: De Quervain's Tenosynovitis, Ganglion, Trigger Finger/ Thumb, Mallet finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. 17.1.4. Pelvis and Hip : IT Band Syndrome, Piriformis Syndrome, Trochanteric Bursitis.	**4**	Must know	LE/SE/SA

	17.1.5. Knee: Osteochondritis Dissecans, Prepatellar and Suprapatellar Bursitis, Popliteal Tendinitis, Patellar Tendinitis, Chondromalacia Patella, Plica Syndrome, Fat Pad Syndrome (Hoffa's syndrome). 17.1.6. Ankle and Foot: Ankle Sprains, Plantar Fasciitis / Calcaneal Spur, Tarsal Tunnel Syndrome, Achilles Tendinitis, Metatarsalgia, Morton's Neuroma.			

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

QUESTION PAPER PATTERN:

Maximum marks: 60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay	03	02	10	20	150 minutes
Short Essay	07	05	04	20	
Short answer	12	10	02	20	
			Total	**60**	

Recommended books:

1.Outline of Fractures, John Crawford Adams.
2.Outline of Orthopedics., John Crawford Adams.
3.Textbook of Orthopedics. Maheswari.
4.Apley's Orthopedics.
5.Textbook of Orthopedics and Traumatology, M.N.Natarajan

SEMESTER-V DURATION: 25 to 30 months

NAME OF THE COURSE: GENERAL MEDICAL & PAEDIATRIC CONDITIONS FOR PHYSIOTHERAPISTS FOR PHYSIOTHERAPISTS

Course description

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE-Evaluation method
	IA	SEE		L	T	P		
General Medical & Paediatric Conditions for Physiotherapists	40	60	100	4	-	-	4	Written -60 marks

COURSE CONTENT: Total 60 Hours

Unit No.	Topic	No. of Hours	Level of importance	Type of questions
1.	**1.1. Infection** 1.1.1. Effects of Infection on the body. 1.1.2. Pathology. 1.1.3. Source and spread of infection.Vaccinations. 1.1.4. Generalized infections. 1.1.5. Rashes and infection. 1.1.6. Food poisoning and gastroenteritis. 1.1.7. Sexually transmitted diseases – HIV infections and Aids.	4 hours	Good to know	SA/SE
2.	**2.1. Poisoning** 2.1.1 Clinical features. 2.1.2 General management. 2.1.3 Common agents in poisoning. 2.1.4 Pharmaceutical agents. 2.1.5 Drugs of misuse. 2.1.6 Chemical pesticides.	5 hours	Good to know	SE/SA

	2.1.7 Envenomation.			
3.	**3.1. Food & Nutrition** 3.1.1. Assessment – Nutritional and Energy requirements. 3.1.2. Deficiency diseases - clinical features and treatment. 3.1.3. Protein – Energy Malnutrition: Clinical features and treatment. 3.1.4. Obesity and its related disorders: Causes – Complications – benefits of weight loss. 3.1.5. Management of Obesity – diet, exercise and medications.	6 hours	Good to know	SE/SA
4.	**4.1. Endocrine Diseases** 4.1.1. Common presenting symptoms of endocrine disease. 4.1.2. Common classical disease presentations, clinical features and its management. 4.1.3. Diabetes Mellitus: Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease, Complications of diabetes.	8 hours	Must know	LE/SE/SA
5.	**5.1. Diseases of the blood** 5.1.1. Examinations of blood disorders – Clinical manifestations of blood disease. 5.1.2. Anemia – signs and symptoms – types and management. 5.1.3. Hemophilia - Cause – clinical features severity of disease – management – complications due to repeated hemorrhages – complications due to therapy.	5 hours	Must know	SE/SA
6.	**6.1. Diseases of the Digestive System:** Clinical manifestations of gastrointestinal disease – Etiology, clinical features, diagnosis, complications and treatment of the following conditions: 6.1.1. Reflux Oesophagitis. 6.1.2. Achalasia Cardia.	8 hours	Good to know	SE/SA

	6.1.3. Carcinoma of Oesophagus. 6.1.4. GI bleeding. 6.1.5. Peptic Ulcer disease. 6.1.6. Carcinoma of Stomach. 6.1.7. Pancreatitis. 6.1.8. Malabsorption Syndrome. 6.1.9. Ulcerative Colitis. 6.1.10. Peritonitis. **6.2. Infections of Alimentary Tract:** Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions: 6.2.1. Viral Hepatitis. **6.2.3.** Wilson's Disease. **6.**2.4. Alpha1-antitrypsin deficiency. **6.**2.5. Tumors of the Liver. **6.**2.6. Gallstones **6.**2.7. Cholecystitis.			
7.	**7.1. Diseases of the Skin:** Examination and clinical manifestations of skin diseases; Causes; Clinical features and management of the following skin conditions: 7.1.1. Leprosy. 7.1.2. Psoriasis. 7.1.3. Pigmentary anomalies. 7.1.4. Vasomotor disorders. 7.1.5. Dermatitis. 7.1.6. Coccal and Fungal Parasitic. 7.1.7. Viral infections.	8 hours	Good to know	SE/SA
8.	**Pediatrics** **8.1.** Problems and management of LBW infants. **8.2.** Perinatal problems and management. **8.3.** Congenital abnormalities and management. **8.4.** Respiratory conditions of childhood. **8.5.** Cerebral Palsy – causes, complications, clinical manifestations, treatment. **8.6.** Spina Bifida – management and	8 hours	Must know	LE/SE/SA

	treatment. **8.7.** Epilepsies – types, diagnosis and treatment. **8.8.** Recognizing developmental delay, common causes of delay. **8.9.** Orthopedic and Neuromuscular disorders in childhood, clinical features and management. **8.1.10.**Sensory disorders – problems resulting from loss of vision and hearing. **8.1.11.**Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, educational delay, The Clumsy Child.			
9.	**Psychiatric Disorders:** Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. Modalities of psychiatric treatment. **9.1.** Psychiatric illness and occupational therapy, **9.2.** Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses. 9.2.1. Anxiety neurosis. 9.2.2. Depression. 9.2.3. Obsessive compulsive neurosis. 9.2.4. Psychosis. 9.2.5. Manic- depressive psychosis. 9.2.6. Post-traumatic stress disorder. 9.2.7.**Psychosomatic reactions:** Stress and Health, theories of Stress – Illness. **9.3. Etio-pathogenesis, manifestations, and management of psychiatric illness:** 9.3.1. Drug dependence and alcoholism. 9.3.2. Somatoform and Dissociative Disorders – conversion reactions, Somatization, Dissociative Amnesia, and Dissociative Fugue. 9.3.3. Personality disorders 9.3.4. Child psychiatry - manifestations, and management of childhood disorders -attention deficit syndrome and behavioural disorders.	8 hours	Must know	LE/SE/SA

	9.3.4. Geriatric psychiatry.			

Note- **LE-** Long Essay, **SE**=Short Essay, **SA=**Short Answers

Question paper pattern:

Maximum marks: 60					Duration
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay	03	02	10	20	150 minutes
Short Essay	07	05	04	20	
Short answer	12	10	02	20	
			Total	60	

Recommended books:

1. Davidson's Principles and Practice of Medicine
2. Harrison's Internal Medicine
3. Braunwald Text of Cardiology
4. Text Book of Cardiology by Hurst

SEMESTER-V

NAME OF THE COURSE: SURGICAL CONDITIONS FOR PHYSIOTHERAPISTS

SEMESTER-IV DURATION: 25 TO 30 MONTHS

Course description

COURSE	MAX MARKS	TOTAL MARKS	HOURS PER WEEK	CREDITS	SEE- Evaluation

	IA	SEE		L	T	P		method
Surgical conditions for physiotherapists	40	60	100	4	-	-	4	Written -60 marks

COURSE CONTENT:

Unit No.	Topic	Hours	Level of importance	Type of questions
1.	**1.1 Fluid** 1.1.1. Electrolyte and Acid-Base disturbances – diagnosis and management. 1.1.2. Nutrition in the surgical patient 1.1.3. Wound healing – basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing 1.1.4 Scars – types and treatment. 1.1.5. Hemostasis – components, hemostatic disorders, factors affecting bleeding during surgery. 1.1.6. Transfusion therapy in surgery – blood components, complications of transfusion. 1.1.7. Surgical Infections ; General Post – Operative Complications and its management.	6	Good to know	SE/SA
2.	**2.1 Reasons for Surgery** 2.1.1 Types of anaesthesia and its effects on the patient 2.1.2 Types of Incisions; Clips Ligatures and Sutures 2.1.3 General Thoracic Procedures – Radiologic Diagnostic procedures, 2.1.4 Endoscopy – types, 2.1.5 Biopsy – uses and types. 2.1.6 Overview and Drainage systems and tubes used in Surgery	3	Must know	LE/SE/SA

3.	**3.1 Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations** 3.1.1 Airway obstruction 3.1.2 Pnuemothorax 3.1.3Hemothorax 3.1.4 Cardiac Tamponade 3.1.5 Tracheobronchial disruption 3.1.6 Aortic disruption 3.1.7 Diaphragmatic disruption 3.1.8 Esophageal disruption 3.1.9 Cardiac and Pulmonary Contusions.	5	Must know	LE/SE/SA
4.	**4.1 Surgical Oncology** 4.1.1 Cancer – definition, types, clinical manifestations of cancer. 4.1.2 Staging of Cancer, surgical procedures involved in the management of cancer.	4	Must know	LE/SE/SA
5.	**5.1 Disorders of the following:** 5.1.1Chest Wall 5.1.2 Lung and Mediastinum	2	Must know	LE/SE/SA
6.	**6.1 Thoracic surgeries** 6.1.1 Thoracotomy – Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. 6.1.2. **Lung surgeries:** Pneumonectomy, Lobectomy, Segmentectomy – Indications, Physiological changes and Complications. 6.1.3. Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung. 6.1.4. Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine, Extracardiac Operations, Closed Heart surgery, Open Heart surgery. 6.1.5 Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications	6	Must know	LE/SE/SA

7.	**7.1 Diseases of the Arteries and Veins : Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases** : 7.1.1 Arteriosclerosis 7.1.2 Aneurysm 7.1.3 Buerger's disease 7.1.4 Raynaud's Disease 7.1.5 Thrombophlebitis 7.1.6 Deep Vein Thrombosis 7.1.7 Pulmonary Embolism 7.1.8 Varicose Veins.	6	Must know	LE/SE/SA
8.	**8.1 Definition, Indication, Incision, Physiological changes and Complications following Common operations like**: 8.1.1Cholecystectomy 8.1.2 Colostomy 8.1.3 Ileostomy 8.1.4 Gastrectomy 8.1.5 Hernias 8.1.6 Appendicectomy 8.1.7 Mastectomy 8.1.8 Neprectomy 8.1.9 Prostectomy.	6	Must know	LE/SE/SA
9.	**9.1 Burn:** 9.1.1.Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management. 9.1.2.Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft; Flaps – Types and uses of Flaps.	4	Must know	LE/SE/SA
10.	**10.1 ENT:** 10.1.1 Common problems of ear 10.1.2 Otitis media, 10.1.3 Otosclerosis 10.1.4 functional achonia and deafness 10.1.5 Facial palsy classification, medical and	4	Must know	SE/SA

	surgical management of lower motor neuron type of facial palsy.			
11.	**11.1 Ophthalmology:** 11.1.1 Ophthalmologic surgical conditions 11.1.2 Refraction's 11.1.3 Conjunctivitis glaucoma 11.1.4 Corneal ulcer 11.1.5 Iritis 11.1.6 Cataract 11.1.7 Retinitis 11.1.8 Detachment of retina 11.1.9 Defects of extra-ocular muscles-surgical management.	4	Must know	LE/SE/SA
12.	**12.1 Women's Health :** 12.1.1 Menstrual cycle and its disorders. 12.1.2 Hormonal disorders of females-obesity and female hormones. 12.1.3 Cancer of the female reproductive organs-management 12.1.4 Infections and sexually transmitted disease in female 12.1.5 Menopause - its effects on emotions and musculoskeletal system. 12.1.6 Malnutrition and deficiencies in females 12.1.7 Sterility-pathophysiology-investigations-management. 12.1.8 Maternal physiology in pregnancy. 12.1.9 Prenatal complications-investigations-management. 12.1.10 Child birth- Stages, complications-investigations-management 12.1.11 Pain relief in labour 12.1.12 Purperium - Post Natal care. 12.1.13 Surgical procedures involving child birth. 12.1.14 Incontinence – Types, Causes, Assessment and Management. 12.1.15 Definition, Indications and Management of the following surgical procedures – Hysterosalphyngography, Dilatation and Curettage, Hysterectomy.	10	Must know	LE/SE/SA

Note- **LE**- Long Essay, **SE**=Short Essay, **SA=**Short Answers

Question paper pattern:

Maximum marks: 60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay	03	02	10	20	150 minutes
Short Essay	07	05	04	20	
Short answer	12	10	02	20	
			Total	**60**	

Recommended books :

1. General Surgical Operations – by Kirk / Williamson
2. Surgery by Nan
3. Bailey and Love's – Short Practice of Surgery
4. Chest Disease by Crofton and Douglas.
5. Patrica A Downie, Text book of Heart, Chest Vascular Disease for physiotherapists, JP Bros.

NAME OF THE COURSE: CLINICAL NEUROLOGY FOR PHYSIOTHERAPISTS

SEMESTER-IV DURATION: 25 TO 30 MONTHS

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE-** Evaluation method
	IA	SEE		L	T	P		
Clinical Neurology For Physiotherapists	40	60	100	3	-	-	3	Written -60 marks

Theory

Unit No.	Topic	Hours	Level of importance	Type of questions

1	Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping.	1	Good to know	SE
2	Classification of neurological involvement depending on level of lesion.	1	Must Know	LE/SE
3	**Neurological assessment:** Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system	1	Must Know	LE/SE
4	**Investigations:** Principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV.	2	Good to know	SE/SA
5	**Neuro-ophthalmology**: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement.	1	Nice to know	SA
6	Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo.	2	Good to know	SE/SA
7	**Lower cranial nerve paralysis** – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's palsy, hemi facial spasm, Glossopharangial neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.	2	Good to know	SE/SA

8	**Cerebro-vascular diseases:** 8.1. Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct.	2	Must know	SE/SA
	8.2. Classification of stroke – Ischemic, hemorrhagic, venous infarcts. Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke. Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management.		Must know	SE/SA
9	**Head injury:** Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.	1	Must know	SE/SA
10	**Higher cortical, neuro psychological and neurobehavioral disorders:** 10.1. Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical& surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizers, and Epilepsy syndromes in adult.	1	Good to know	SE/SA
	10.2. Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive-compulsive disorders.	1	Good to know	SE/SA
	10.3. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of Brain death.	1	Good to know	SE/SA
	10.4. Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders.	1	Must Know	SE/SA
11	**Movement disorders:** Definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential	2	Must Know	SE/SA

	diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease.			
12	**Cerebellar and coordination disorders:** Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis.	2	Must Know	LE/SE/SA
13	**Spinal cord disorders:** Functions of tracts, definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcodosis.	3	Must Know	LE/SE/SA
14	**Brain tumors and spinal tumors:** Classification, clinical features, investigations, medical and surgical management.	1	Good to know	SE
15	**Infections of brain and spinal cord:** Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post-polio syndrome. Complications of systemic infections on nervous system – Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis.	3	Must Know	LE/SE/SA

16	**Motor neuron diseases:** - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy.	2	Must Know	LE/SE/SA
17	**Multiple sclerosis -** Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications.	1	Must Know	LE/SE/SA
18	**Disorders of neuromuscular junction –** Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism.	1	Must Know	LE/SE/SA
19	**Muscle diseases:** Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia.	2	Must Know	LE/SE/SA
20	**Polyneuropathy** – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, acute idiopathicPolyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy.	2	Must Know	LE/SE/SA
21	**Focal peripheral neuropathy:** Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia. Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostal nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy,	2	Must Know	LE/SE/SA

	Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudental nerve palsy.			
22	Paediatric neurology: Neural development, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplacia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome.	3	Must Know	LE/SE/SA
23	Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Pant & Fungal poisoning, Animal poisons, & Complications of organ transplantation.	1	Must Know	LE/SE/SA
24	**Introduction, Indications and Complications of following Neuro surgeries:** Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation.	3	Must Know	LE/SE/SA

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

Maximum marks:60					**Duration**
Type of	Number of	Number of Questions	Marks for each	Total	

question	questions	to be answered	question		
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books:

1. Davidson's Principles and Practice of Medicine
2. Textbook of Neurology- Victor Adams
3. Brains Clinical Neurology.
4. Illustrated Neurology & Neurosurgery
5. Brains Diseases of Nervous System

NAME OF THE COURSE: CARDIOVASCULAR & PULMONARY CONDITIONS FOR PHYSIOTHERAPISTS

SEMESTER-IV DURATION: 25 TO 30 MONTHS

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE-** Evaluation method
	IA	SEE		L	T	P		
Cardiovascular & Pulmonary Conditions for Physiotherapists	40	60	100	3		-	3	Written -60 marks

Theory-45 hrs

Unit No.	Topic	Hours	Level of importance	Type of questions

1.	Anatomy and Physiology a Respiratory system i. Upper respiratory tract ii. Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments iii. Respiratory unit, hilum of lung. iv. Muscles of respiration v. Pleura, intra pleural space, intra pleural pressure, surfactant vi. Mechanics of respiration – Chest wall movements, lung & chest wall compliance vii. V/Q relationship, airway resistance viii. Respiratory centre, Neural & chemical regulation of respiration ix. Lung volumes and lung capacities, Spiro meter, lung function test x. Pulmonary circulation, Lung sounds, cough reflex	2	Good to know	SE/SA
	b Cardiovascular systems i. Chambers of heart, semi lunar and atria ventricular valves ii. Coronary circulation, conductive system of heart iii. Cardiac cycle, ECG, Heart sounds iv. Blood pressure, pulse, cardiac output	2	Good to know	SE/SA
2.	Cardio Vascular system 2.1. Definition, etiology, pathogenesis, clinical features, complications, Conservative and surgical management of the following conditions. i. Ischemia heart disease ii. Myocardial infarction iii. Heart failure iv. Cardiac arrest v. Rheumatic fever vi. Hypertension vii. Infective endocarditis viii. Myocarditis & cardiomyopathy **2.2. Cardiovascular Disease :** 2.2.1. Examination of the Cardiovascular System Investigations : 2.2.1.1. ECG, Exercise Stress Testing, Radiology	6	Must know	LE/SE/SA

	2.2.1.2. Clinical manifestations of Cardiovascular disease. 2.2.1.3. Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart: • Pericarditis,Myocarditis,Endocarditis,Rheumatic Fever – resulting in valve disorders, Ischemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest ; Examination and Investigations of diseases of arteries and veins. 2.2.1.4.**Hypertension:** Definition, causes, classification, types, assessment, investigations and management. **2.3. Disorders of the Heart –** 2.3.1. Definition, Clinical features, diagnosis and choice of management for the following disorders : 2.3.1.1 **Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease :** Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetraology of Fallot, Transposition of Great Vessels ; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and Insufficiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors.	8 1 8		
3.	Respiratory System **3.1. Respiratory Disease :** 3.1.1. Examination of the Respiratory System – **Investigations:** Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis; Clinical manifestations of Lung disease. **3.1.2. Patterns of lung disease:** Chronic Obstructive Lung Disease and Restrictive Lung Disease **3.1.3.** Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : 3.1.3.1. Chronic Bronchitis. 3.1.3.2. Emphysema 3.1.3.3. Asthma. 3.1.3.4. Bronchiectasis 3.1.3.5. Cystic Fibrosis 3.1.3.6. Upper Respiratory Tract Infections 3.1.3.7. Pneumonia	3 1	Must know Must know	LE/SE/ SA

	3.1.3.8. Tuberculosis 3.1.3.9. Fungal Diseases 3.1.3.10. Interstitial Lung Diseases 3.1.3.11. Diseases of the pleura, diaphragm and chest wall. **3.1.4.** Respiratory failure – Definition, types, causes, clinical features, diagnosis and management. **3.2. Chest wall disorders-** 3.2.1.Definition, Clinical features, diagnosis and choice of management for the following disorders. 3.2.1.1. Chest wall deformities 3.2.1.2. Chest wall tumors 3.2.1.3. Spontaneous Pneumothorax 3.2.1.4. Pleural Effusion 3.2.1.5. Empyema Thoracis 3.2.1.6. Lung abscess 3.2.1.7. Bronchiectasis 3.2.1.8. Tuberculosis 3.2.1.9. Bronchogenic Carcinoma 3.2.1.10. Bronchial Adenomas 3.2.1.11. Metastatic tumors of the Lung 3.2.1.12. Tracheal Stenosis 3.2.1.13. Congenital tracheomalacia 3.2.1.14. Neoplasms of the trachea 3.2.1.15. Lesions of the Mediastinum. Carcinoma of the female breast.	6 1 7		

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books:

1. Davidson's Principles and Practice of Medicine

2. Harrison's Internal Medicine
3. Braunwald Text of Cardiology
4. Text Book of Cardiology by Hurst

SKILL ENHANCEMENT COURSE

CLINICAL TRAINING-II

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE Evaluation method
	CIA	SEE		L	T	P		
Clinical training-**II**	20	30	50	-		6	2	**Practical-** 20marks **Viva-**10 marks

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE Evaluation method
	CIA	SEE		L	T	P		
Clinical training-**I**	20	30	50	-		6	2	**Practical-** 20marks **Viva-**10 marks

Course description: This course is designed to enhance the clinical skills of the students. The course will continue till 8th Semester with progressive skill enhancement in clinical and patient handling. There will be continuous monitoring of the students through prescribed format. At the end of the course student will appear for the University examination.

Clinical training II will focus on Communication, Professionalism, assessment technique and handling skills.

INTERNAL ASSESSMENT:

Student should submit a portfolio on

3. **SIX** reports on information gathered from their communication with patients and information retrieved from the patients report **(Appendix I)**
4. Logged knowledge and skills form **(Appendix II)**

FINAL ASSESSMENT: ((SEE)

The students in this clinical training will be assessed based on the Clinical assessment form **(Appendix III)**

Students will be assessed on 4 areas

VI. Communication

VII. Professionalism

VIII. The skill in performing individual assessment technique and the handling skill

IX. The skill in performing individual treatment technique and the handling skill

X. Documentation

DISTRIBUTION OF ASSESSMENT MARKS

Internal Assessment - Portfolio (40%)

Final Assessment (SEE)- Clinical Assessment (60%)

SEMESTER-VI

(31-36 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	Community Medicine	40	60	100	4	-	-	4
2	Core	Evidence Based Practice & Clinical Reasoning	40	60	100	2	-	-	2
3	Core	Physiotherapy in Musculoskeletal Conditions - IA	40	60	100	3	-	-	3
4	Core	Physiotherapy in Cardiopulmonary Conditions & Intensive	40	60	100	4	-	-	4

		Care - A							
5	Core	Physiotherapy in Musculoskeletal Conditions - IB	40	60	100	-	-	4	2
6	Core	Physiotherapy in Cardiopulmonary Conditions & Intensive Care - B	40	60	100	-	-	6	3
7	SEC	Clinical Training-III	20	30	50	-	-	9	3
Total					**650**				**21**

NAME OF THE COURSE: COMMUNITY MEDICINE

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE-** Evaluation method
	IA	SEE		L	T	P		
Community medicine	40	60	100	4	-	-	4	Written -60 marks

Theory-60 hrs

Unit	Topic	No. of Teaching Hours	Level of importance	Type of questions
1	**Health and Disease:** Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being, Spectrum and Determinants of Health, Concept and natural history of Disease, Concepts of disease control and prevention, Modes of Intervention, Population Medicine, The role of socio-economic and cultural environment in health and disease.	5	Must know	LE/SE/SA
2	**Epidemiology:** Definition and scope. Principles of Epidemiology and Epidemiological methods:	7	Must	LE/SE

	Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. **Screening for Disease:** Concept of screening, Aims and Objectives, Uses and types of screening.		know	
3	**Epidemiology of communicable disease:** Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, 0besity, Blindness, Accidents and Injuries.	7	Must know	LE/SE
4	**Public health administration-** an overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programmes. **Health problems of vulnerable groups-** pregnant and lactating women, infants and pre-school children, occupational groups.	4	Must know	SE
5	**Health programmes in India:** Vector borne disease control programme, National leprosy eradication programme, National tuberculosis programme, National AIDS control programme, National programme for control of blindness, Iodine deficiency disorders (IDD) programme, Universal Immunization programme, Reproductive and child health programme, National cancer control programme, and National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme,	4	Must know	LE/SE

	Minimum needs programme.			
6	**Demography and Family Planning**: Demographic cycle, Fertility, Family planning-objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods	3	Must know	SE
7	Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranasal and post natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics	6	Must know	SE/SA
8	**Nutrition and Health:** Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes.	4	Must know	SE/SA
9	**Environment and Health:** Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology.	3	Must know	SE/SA
10	**Hospital waste management:** Sources of hospital waste, Health hazards, Waste management	3	Must know	SE/SA
11	**Disaster Management:** Natural and manmade disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness	4	Must know	LE/SE
12	**Occupational Health:** Occupational environment, Occupational hazards, Occupational diseases, Prevention of occupational diseases. Social security and other measures for the protection from occupational hazard accidents and diseases. Details of compensation acts.	4	Must know	LE/SE
13	**Mental Health:** Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill	3	Must	SE

	health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as mental retardation.		know	
14	**Health Education:** Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education.	3	Good to know	SE

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books:

1. Textbook of Preventive & Social Medicine, Dr. J E Park

NAME OF THE COURSE: EVIDENCE BASED PRACTICE & CLINICAL REASONING

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE-** Evaluation method
	IA	SEE		L	T	P		
Evidence Based Practice	40	60	100	2	-	-	2	Written -60

& Clinical Reasoning								marks

Theory -30 hrs

Unit	Topic	No. of Teaching Hours	Level of importance	Type of questions
1	Introduction to Evidence Based Practice: Definitions, Evidence Based Practice	1	Must know	SE/SA
2	**Concepts of Evidence based Physiotherapy:** Awareness, Consultation, Judgement, and Creativity	1	Must know	SE/SA
3	Development of Evidence based knowledge, The Individual Professional, Professionals within a discipline, and Professionals across disciplines	1	Must know	SE/SA
4	**Evidence Based Practitioner:** The Reflective Practitioner, The E Model, Using the E Model	2	Must know	SE/SA
5	**Finding the Evidence:** Measuring outcomes in Evidence Based Practice, Measuring Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation	4	Must know	LE/SE/SA
6	**Searching for the Evidence:** Asking Questions, Identifying different sources of evidence, Electronic Bibliographic databases and World Wide Web, Conducting a literature search. Step by-step search for evidence.	4	Must know	LE/SE/SA
7	**Assessing the Evidence:** Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurement, Biostatistics, The critical review of research using qualitative methods	4	Must know	LE/SE/SA
8	**Systematically reviewing the evidence:** Stages of systematic reviews, Meta-analysis, The Cochrane collaboration	4	Must know	LE/SE/SA
9	**Economic evaluation of the evidence:** Types of economic evaluation, conducting economic evaluation, critically reviewing	1	Must know	SE/SA

	economic evaluation, locating economic evaluation in the literature.			
10	**Using the evidence:** Building evidence in practice; Critically Appraised Topics (CATs), CAT format, Using CATs, Drawbacks of CATs.	2	Must know	LE/SE/SA
11	**Practice guidelines, algorithms, and clinical pathways:** Recent trends in health care, Clinical Practice Guidelines (CPG), Algorithms, Clinical pathways, Legal implications in clinical pathways and CPG, Comparison of CPGs, Algorithms and Clinical Pathways.	2	Must know	SE/SA
12	**Communicating evidence to clients, managers and funders:** Effectively communicating evidence, Evidence based communication in the face of uncertainty; Evidence based communication opportunities in everyday practice.	3	Must know	SE/SA
13	**Research dissemination and transfer of knowledge:** Models of research transfer, Concrete research transfer strategies, Evidence based policy.	2	Must know	SE/SA

LE- Long Essay, SE-Short Essay, SA-Short answer.

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books:

NAME OF THE COURSE:

PHYSIOTHERAPY IN MUSCULOSKELETAL CONDITIONS – IA (Theory)

Course Description:

The course provides students with the fundamental principles for Physiotherapy diagnosis and treatment of the diseases and injuries of the musculoskeletal system that they will need during their foundation training.

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE- Evaluation method
	IA	SEE		L	T	P		
Physiotherapy in Musculoskeletal Conditions – IA	40	60	100	3	-	-	3	Written -60 marks

Theory

Unit	Topic	Number of Hours	Level of Importance	Type of Questions
1.	**Physiotherapy Assessment (PT) for Orthopedic conditions** 1.1 SOAP format. Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness. Pain assessment- intensity, character, aggravating and relieving factors, site and location.	**1**	Must Know	LE/SE
	1.2 Objective- on observation - body built swelling, muscle atrophy, deformities, posture and gait.	**1**		
	1.3 On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances.			
	1.4 On examination – ROM – active and passive, resisted isometric tests, limb length-apparent, true and segmental , girth measurement, muscle length testing-tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination-dermatomes, myotomes and reflexes,	**1**		

	special tests and functional tests.			
	1.5 Prescription of home program. Documentation of case records, and follow up.	**1**		
2.	**Fractures** 2.1 Review on Types, classification, signs and symptoms, complications. Fracture healing - factors affecting fracture healing. Principles of fracture management - reduction - open and closed, immobilization - sling, cast, brace, slab, traction - manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing.	1	Must Know	SE/SA
	2.2 Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases - short and long term goals. Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.	1	Must Know	LE/SE
	2.3 PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal union, RSD, myositis ossificans, AVN, pressure sores etc.	1	Must Know	LE/SE/SA
3.	**Specific fractures and dislocations :** 3.1 PT assessment and management of upper limb fractures and dislocations.	**1**	Must Know	LE/SE/SA
	3.2 PT assessment and management of lower limb fractures and dislocations including pelvis.	**2**	Must Know	LE/SE/SA
	3.3 PT assessment and management spinal fractures.	**1**	Must Know	LE/SE/SA

4.	**Deformities and Postural Abnormalities:** 2.1 Review in detail the causes, signs and symptoms, radiological features, medical and surgical management. Describe the PT. assessment and management of the following conditions – 2.1.1 Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities.	**1**	Must Know	LE/SE/SA
	2.1.2 Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum.	**1**	Must Know	SE/SA
	2.2 Define; review the postural abnormalities of spinal column, clinical features, deformities, medical and surgical management. Describe PT assessment and management and home program.	**2**	Must Know	LE/SE/SA
5.	**Therapeutic Techniques** 5.1 Selection and application of Physiotherapeutic techniques, maneuver's, modalities for preventive, curative and rehabilitative means in all conditions.	2	Must Know	SE/SA
	5.2 Principles of various schools of thought in manual therapy. (Briefly Maitland, Mulligan, and Mc kenzie).	2	Must Know	SE/SA
6.	**Degenerative and Inflammatory conditions:** 6.1 Definition, signs and symptoms, clinical features, path physiology, radiological features, deformities, medical, surgical management. Describe the PT assessment and management and home program for the following conditions 6.1.1 Osteoarthritis - emphasis mainly on knee, hip and hand,	1	Must Know	SE/SA
	6.1.2 Rheumatoid Arthritis	1	Must Know	LE/SE/SA
	6.1.3 Ankylosing spondylitis	1	Must Know	LE/SE/SA
	6.1.4 Gout, Perthes disease	1	Must Know	SE/SA
	6.1.5 Periarthritic shoulder.	1	Must Know	LE/SE/SA
7.	**Osteoporosis: C**auses, predisposing factors, investigations and treatment.	2	Must Know	SE/SA

8.	**Infective conditions:** 7.1 Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – 7.1.1 Osteomyelitis – acute and chronic	**1**	Good to Know	SE/SA
	7.1.2 Septic arthritis, Pyogenic arthritis,	**1**		
	7.1.3 TB spine and major joints - knee and hip.	**1**		
9.	**Cerebral palsy:** 8.1 Definition, etiology, classification, clinical features, complications, deformities, medical and surgical management and home program with special emphasis on carrying techniques. PT management after surgical corrections.	2	Must Know	SE/SA
10.	**Poliomyelitis:** 9.1 Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT. assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program.	**2**	Good to Know	LE/SE/SA
11.	**Leprosy** 10.1 Definition, cause, clinical features, medical and surgical management. PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post operatively.	**1**	Nice to Know	SE/SA
12.	**Spinal conditions:** 11.1 Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: 11.1.1 Cervical spondylosis, Lumbar spondylosis,	**1**	Must Know	LE/SE/SA
	11.1.2 Spondylolysis, Spondylolisthesis,	**1**		
	11.1.3 Intervertebral disc prolapse	**1**		
	11.1.4 Spinal canal stenosis,	**1**		
	11.1.5 Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Coccydynia,	**1**		
	11.1.6 Spina bifida occulta.	**1**		

13.	**Spinal traction** 11.2 Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction.	1	Must Know	SE/SA
14.	**Applied Yoga in Orthopaedic conditions** – 11.1 Rationale of Yoga and Physiotherapy, 11.2 Therapeutic benefits of Yoga.	2	Good to Know	SE/SA
15.	**Complimentary Therapy**	2	Nice to Know	SE/SA

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books

1. Tidy's physiotherapy.
2. Textbook of orthopedics- Cash.
3. Clinical orthopedic rehabilitation- Brotzman.
4. Orthopedic physiotherapy - Jayant Joshi.
5. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz
6. Sports physiotherapy- Maria Zuluaga
7. Orthopaedic Physical Assessments – David J. Magee

NAME OF THE COURSE: PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS & INTENSIVE CARE – A(Theory)

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE- Evaluation method
	IA	SEE		L	T	P		
Physiotherapy in Cardiopulmonary Conditions & Intensive Care - A	40	60	100	4	-	-	4	Written -60 marks

Theory

Unit	Topic	No. of Teaching Hours	Level of importance	Type of questions
1	Anatomical and Physiological differences between the Adult and Pediatric lung	1 hour	Must Know	SE/SA
2	Bedside assessment of the patient-Adult & Pediatric 2.1. Subjective assessment 2.2. Objective assessment 2.3. Pediatric assessment 2.4. Investigations and exercise test 2.5. Aims and treatment plan	 1 hour 1hour 1hour 2 hour 2 hour	Must Know	LE/SE
3	Investigations and tests 3.1.Exercise tolerance Testing – Cardiac & Pulmonary 3.2.Radiographs 3.3.PFT 3.4.ABG 3.5.ECG 3.6.Hematological and Biochemical Tests	 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour	Must Know	LE/SE
4	Physiotherapy techniques to increase lung volume. 4.1. Controlled mobilization and positioning 4.2. Breathing exercises 4.3. Neurophysiological Facilitation of Respiration. 4.4. Mechanical aids -Incentive Spirometry, CPAP,IPPB.	 1 hour 1 hour 1 hour 1 hour	Must Know	LE/SE/ SA
5	Physiotherapy techniques to decrease the work of breathing. 5.1. Measures to optimize the balance between	 1 hour	Must Know	LE/SE/ SA

	energy supply and demand, positioning. 5.2. Breathing re-education – Breathing control techniques 5.3. Mechanical aids – IPPB, CPAP, BiPAP	 1 hour 1 hour		
6	Physiotherapy techniques to clear secretions 6.1. Hydration, Humidification & Nebulisation, Mobilisation. 6.2. Breathing exercises, Postural Drainage. 6.3. Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage. 6.4. Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning	 1 hour 1 hour 1 hour 1 hour	Must Know	LE/SE/ SA
7	Drug therapy 7.1. Drugs to prevent and treat inflammation 7.2. Drugs to treat Bronchospasm. 7.3. Drugs to treat Breathlessness. 7.4. Drugs to help sputum clearance. 7.5. Drugs to inhibit coughing. 7.6. Drugs to improve ventilation. 7.7. Drugs to reduce pulmonary hypertension 7.8. Drug delivery doses, Inhalers and Nebulisers.	1 Hour	Good to know	SE/SA
8	Neonatal and Pediatric Physiotherapy 8.1. Chest physiotherapy for children, The neonatal unit. 8.2. Modifications of chest physiotherapy for specific neonatal disorders. 8.3. Emergencies in the neonatal unit	 1 hour 1 hour	Must Know	LE/SE/ SA
9	Physiotherapy in Obstructive lung conditions 9.1. Conditions and assessment. 9.2. Physiotherapy Management	1 hour 1 hour	Must Know	LE/SE/ SA
10	Physiotherapy in Restrictive lung conditions 10.1. Restrictive lung diseases with brief Assessment 10.2. Physiotherapy management	 1 hour 1 hour	Must Know	LE/SE/ SA
11	Management of breathlessness 11.1. Breath reeducation 11.2. Relaxation techniques 11.3. Positioning	 1 hour 1 hour 1 hour	Must Know	LE/ES

	11.4. Mechanical Aids			
12	Pulmonary Rehabilitation 12.1. Assessment and evaluation 12.2. Components of Rehab 12.3. Exercise training Program	 1 hour 1 hour 1 hour	Must Know	LE/SE/ SA
13	Physiotherapy following Lung surgeries 13.1. Types of incisions 13.2. Complications and pre and post operative Management	 1 hour 1 hour	Must Know	LE/SE
14	Respiratory failure 14.1. Types of respiratory failure 14.2.Oxygen Therapy and Mechanical Ventilation	 1 hour 1 hour	Must Know	LE/SE
15	Introduction to ICU : ICU monitoring – 15.1. Apparatus, Airways and Tubes used in the ICU. 15.2. Physiotherapy in the ICU. 15.3. Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock 15.4. Dealing with an Emergency Situation in the ICU.	 1 hour 1 hour 1 hour 1 hour	Must Know	LE/SE/ SA
16	Physiotherapy management following cardiac surgeries 16.1Types of incisions 16.2Complications and postural deformity and Physiotherapy Management	 1 hour 1 hour	Must Know	LE/SE
17	Cardiac Rehabilitation 17.1. Assessment and evaluation 17.2. Components and phases of Rehab And Exercise training Program.	 1 hour 1 hour	Must Know	LE/SE
18	Physiotherapy management following PVD 18.1. Diseases of artery and assessment 18.2. Diseases of Veins and Assessment Physiotherapy Management	 1 hour 1 hour	Must Know	LE/SE/ SA

19	Abdominal Surgeries– 19.1. Types of incisions 19.2. Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax	1 hour 1 hour	Must Know	SE/SA
20	Management of Amputations 20.1. Types of Amputations 20.2. Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes	1 hour 1 hour	Must Know	LE/SE/ SA
21	Home program and education of family members in patient care. 21.1. Role of family in Rehabilitation 21.2. Home program	1 hours	Good to know	SE/SA
22	Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions. 22.1. Hypertension 22.2. Diabetes 22.3. Renal Failure 22.4. Obesity	1 hour 1 hour	Good to know	LE/SE/ SA
23	Applied Yoga in Cardio Vascular & Pulmonary conditions 23.1. Rationale of Yoga and Physiotherapy, Therapeutic benefits of Yoga.	1 hour	Nice to Know	SE/SA

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended Books:

1. Tidy's physiotherapy.

2. Cash's Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.

3. The Brompton Guide to chest physiotherapy DU Gasket [Completed]

4. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz

5. Elements in Pediatric Physiotherapy – Pamela M Eckersley

6. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky

7. Cardiao pulmonary Symptoms in physical Therapy practice Cohen and Michel

8. Chest Physiotherapy in Intensive Care Unit by Mackenzi

9. Cash's Text book of General Medicine and Surgical conditions for Physiotherapists.

10.Physiotherapy in Psychiatry

11.Physical Therapy for the Cancer patient by M.C Garvey

SEMESTER- VI

PHYSIOTHERAPY IN ORTHOPEDICS & SPORTS (Practical)

Course Description: The course in orthopaedics and sports physiotherapy provides students with the fundamental principles for Physiotherapy diagnosis and treatment of the diseases and injuries of the musculoskeletal system that they will need during their foundation training.

Course Objectives

On completion of the course, students shall demonstrate the ability to (Practical)

- Approach patients in a professional manner
- Identify the Indications and uses of the various assistive devices, orthopedic implants, immobilisers, surgical procedures for common Orthopaedic conditions
- Obtain the medical and surgical history and perform examination of diseases and injuries of the musculoskeletal system.
- Perform primary management & first aid; know the indications and contraindications of the planned management.
- Make assessments of possible complications of the condition.
- Identify and describe obvious fractures or luxations on the basis of X-ray images
- Identify and describe common degenerative conditions such as osteoarthritis of the hip or knee on the basis X-ray images

- Perform appropriate mobilization techniques

Sixth Semester (31-36 months)			
Sl. No.	**Course Titles**	**Hours**	**Weekly class hours**
		Practical	
BPT-030	Physiotherapy in Orthopedics & sports 1B	60	4

Practical

Nature of Practical Class:
Demonstration, Small group teaching, Group discussion, Role Play

Unit	Topic	Number of Hours	Level of Importance	Type of Questions
1	**ysiotherapy Assessment (PT) for Orthopedic conditions** 1.1. SOAP format. 1.1.1. Subjective	**2**	Must Know	LC/SC
	1.1.2.Objective	**2**		
	1.1.3 .Assessment	**2**		
	1.1.4 Plan and Management	**2**		
	1.1.5 Documentation of case records, and follow up.	**2**		
2	**Fractures** 2.4 PT assessment and management of Fractures/Dislocations Upper Limb	10	Must Know	LC/SC
	2.5 PT assessment and management of Fractures/Dislocations Lower Limb	10		
2	**Specific fractures and dislocations : [4 Hours]** 3.4 PT assessment and management spinal fractures.	**5**	Must Know	LC/SC
16.	**Deformities and Postural Abnormalities:** 4.1 Postural Assessment	**5**	Must Know	LC/SC
17.	**Therapeutic Techniques** 5.3 Manual therapy.	10	Must Know	LC/SC

18.	**Degenerative and Inflammatory conditions:** [5 Hours] 6.2 PT assessment and management of Degenerative and inflammatory conditions.	5	Must Know	LC/SC
19.	**Spinal conditions:** [3 Hours] 7.1 PT assessment and management of Spinal conditions.	**5**	Must Know	LC/SC
	Total Hours	**60**		

PRACTICAL

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.
3. Detailed Orthopaedic Physical Assessment of Individual joints.

SEMESTER-VII

(37-42 MONTHS)

SEMESTER-VII (37-42 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week			Credits
			IA	SEE		L	T	P	
1	Core	Neuro Physiotherapy - A	40	60	100	4	-	-	4
2	Core	Physiotherapy in Musculoskeletal Conditions - IIA	40	60	100	3	-	-	3
3	Core	Physiotherapy in General Surgical Conditions & Women's Health /OBG-A	40	60	100	3	-	-	3
4	Core	Neuro Physiotherapy - B	40	60	100	-	-	6	3
5	Core	Physiotherapy in Musculoskeletal Conditions - IIB	40	60	100	-	-	4	2
6	Core	Physiotherapy in General Surgical Conditions & Women's Health/ OBG - B	40	60	100	-	-	4	2
7	SEC	Clinical Training-IV	20	30	50	-	-	6	2
Total					**650**				**19**

COURSE NAME : NEURO PHYSIOTHERAPY – A (Theory)

COURSE	MAX MARKS		TOTAL MARKS	HOURS PER WEEK			CREDITS	SEE- Evaluation method
	IA	SEE		L	T	P		
Physiotherapy in Musculoskeletal Conditions – IIA	40	60	100	4	-	-	4	Written -60 marks

Theory -60 hrs

Unit	Topic	Number of Hours	Level of Importance	Type of Questions
1	Review of Basic Neuro Anatomy and Neuro Physiology	1	Nice to know	SA
2	Neurological Assessment: 2.1. Adult: 2.1.1. Required materials for examination, Chief complaints. 2.1.2. History taking – Present, Past, medical, familial, personal histories, Observation, Palpation. 2.1.3. Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment. 2.1.4. Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity. 2.1.5. Reflexes – Developmental reflexes, deep tendon reflexes, Superficial reflexes. 2.1.6. Sensory examination – Superficial, Deep and Cortical sensations. 2.1.7. Special tests – Romberg's, Kernig's sign, Brudenzki sign, Tinels's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc. 2.1.8. Balance and coordination examination. 2.1.9. Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis. 2.1.10. Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading.	10	Must know	LE/SE/SA
	2.2. Paediatric 2.2.1. Developmental milestones. 2.2.2. Developmental reflexes. 2.2.3. Neuro developmental screening tests. 2.2.4. Evaluation 2.2.4.1.History,Observation, Palpation, Milestone Examination,	8	Must know	LE/SE/SA

	Developmental reflex Examination, Higher mental function,Cranial nerve examination,Motor & Sensory examination, Reflex testing,Balance & Coordination examination, Gait analysis, Functional analysis.			
3	Neuro physiological Techniques - Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: 3.1. NDT 3.2. PNF 3.3. Vojta therapy 3.4. Rood's Sensory motor Approach 3.5. Sensory Integration Approach 3.6. Brunnstorm movement therapy 3.7. Motor relearning program 3.8. Muscle re-education approach 3.9. Temple fay technique 3.10. Constraint induced movement therapy.	8	Must know	LE/SE/ SA
4	Physiotherapy in Paediatric Neurology: (Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis). 4.1. High Risk babies 4.2. Minimum brain damage 4.3. Developmental disorders 4.4. Cerebral palsy 4.5. Autism 4.6.Down's Syndrome 4.7. Hydrocephalus 4.8. Chorea 4.9. Spina bifida 4.10. Syringomyelia. 4.11. Poliomyelitis, Post Polio Syndrome List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities.	10	Must know	LE/SE/ SA

5	Adult Neurological conditions [History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities] 5.1. Disorders of circulation 5.1.1. Cortical, Cerebellar, Thalamic, & Brain-stem 5.2. Head injury 5.3. Space occupying lesions 5.3.1. Brain 5.3.2. Spinal cord 5.4. Lesions of Extra-pyramidal system & Basal ganglia 5.4.1. Parkinsonism, Chorea, Athetosis, Dystonia, Spasmodic torticolis, Cerebellar Ataxia, etc. 5.5. Degenerative disorders 5.5.1. M.N.D., Hereditary Ataxia, Peroneal muscular atrophy, Alzheimer's Disease 5.6. Disorders of spinal cord 5.6.1. Spinal cord injury ▪ Quadriplegia, Paraplegia 5.6.2. Syringomyelia 5.6.3. Transverse myelitis 5..7. Infective disorders of Nervous System 5.7.1. Tetanus, Tabes Dorsalis, Meningitis, Encephalitis , Leprosy 5.8. Disorders of voluntary muscles 5.8.1. Dystrophies, Atrophies, & 5.8.2. Neuro-muscular junction disorders ▪ Myasthenia Gravis, ▪ Eaton-Lambert Syndrome, 5.9. Multiple sclerosis 5.10. Perceptual disorders 5.11. Bladder & Bowel Dysfunction	15	Must know	LE/SE/ SA
6	Physiotherapy in Peripheral Nerve Injuries and Disorders: 6.1. Evaluation and Management i. Hereditary motor sensory neuropathy	2	Must know	SE/SA

	ii. Guillain-Barre syndrome iii. Brachial plexus palsy iv. Thoracic outlet syndrome v. Lumbosacral plexus lesions vi. Phrenic &intercostals nerve lesions vii. Median nerve palsy viii. Ulnar nerve palsy ix. Radial nerve palsy x. Musculocutaneous nerve palsy xi. Anterior & Posterior interosseous nerve palsy xii. Axillary nerve palsy xiii. Long thoracic nerve palsy xiv. Suprascapular nerve palsy xv. Sciatic nerve palsy xvi. Tibial nerve palsy xvii. Common peroneal nerve palsy xviii. Femoral nerve palsy xix. Obturator nerve palsy xx. Pudental nerve palsy xxi. Polyneuropathy :- Sub-acute combined degeneration, G B Syndrome, Alcoholic & Diabetic neuropathy, tumours.			
7	Physiotherapy in Neurological gaits: 7.1. Assessment 7.1.1. Quantitative and Qualitative (Kinetic & Kinematics) analysis, 7.2. Management 7.2.1. Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait etc.	2	Must know	SE/SA
8	Physiotherapy in Pre and Post surgical conditions: Evaluation and Management a. Spinal disc herniation, b. Spinal stenosis, c. Spinal cord trauma, d. Head trauma, e. Brain tumors, f. Tumors of the spine, g. Spinal cord and peripheral nerves, h. Cerebral aneurysms, i. Subarachnoid hemorrhages, j. Epilepsy,	3	Must know	LE/SE/ SA

	k. Parkinson's disease, l. Hemiballism, m. Psychiatric disorders, n. Malformations of the nervous system, o. Carotid artery stenosis, p. Arteriovenous malformations, q. Spina bifida			
9	Applied Yoga in neurological conditions – Rationale of Yoga and Physiotherapy, Therapeutic benefits of Yoga.	1	Nice to know	SE

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Textbook of Neurology for Physiotherapists
3. Neurological Rehabilitation by D Umphred
4. Physical Rehabilitation Assessment and Treament – O’Sullivan Schmitz
5. Elements of Pediatric Physiotherapy-Eckersley
6. Occupational Therapy for Physical Dysfunction - Authors: Mary Vining Radomski, Catherine A. Trombly Latham. Lippincott Williams & Wilkins.
7. DeJong's The Neurologic Examination, Authors: Campbell, William W.
8. Pediatric Physical Therapy. Authors: Jan Stephen Tecklin. Lippincott Williams & Wilkins

COURSE NAME: PHYSIOTHERAPY IN MUSCULOSKELETAL CONDITIONS – IIA (Theory)

COURSE	**MAX MARKS**		**TOTAL MARKS**	**HOURS PER WEEK**			**CREDITS**	**SEE-** Evaluation method
	IA	SEE		L	T	P		
Physiotherapy in	40	60	100	3	-	-	3	Written -60

Musculoskeletal Conditions – IIA								marks

Theory-45 hrs

Unit	Topic	Number of hours	Level of importance	Type of question
1.	**Orthopedic surgeries: [4 Hours]** 1.1 Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as : Arthrodesis, Osteotomy, Arthroplasty-partial and total - Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and total replacement;	2	Must know	LE/SE/SA
	1.2 Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re-attachment of limbs, External fixators, Synovectomy.	2		
2.	**Shoulder joint : [2 Hours]** 2.1 Conservative and Post operative PT management of the following conditions- 2.1.1 Rotator cuff tears	1	Must know	LE/SE/SA
	2.1.2 Impingement syndrome and Subacromial decompression	1		
	2.1.3 Shoulder instabilities, AC joint injuries	1		
	2.1.4 TOS	1		
	2.1.5 RSD	1		
	2.1.6 Total shoulder replacement and Hemi replacement	1		
3.	**Elbow and forearm: [1 Hours]** 3.1. Excision of radial head - Post operative PT management.	1	Must know	LE/SE/SA
	3.2. Total elbow arthroplasty- Post operative PT management.	1		
4.	**Wrist and Hand:** [2 Hours] 4.1 - Post operative PT management of the following Conditions 4.1.1 Total wrist arthroplasty. 4.1.2 Repair of ruptured extensor tendons.	1	Must know	LE/SE/SA

	4.1.3 Carpal tunnel syndrome. 4.1.4 Flexor and extensor tendon lacerations	1		
5.	**Hip: Joint surgeries** [2 Hours] 5.1 Post operative PT management of following conditions 5.1.1 Hemi and total hip replacement	1	Must know	LE/SE /SA
	5.1.2 Tendonitis and bursitis. - management.	1		
6.	**Knee:** [6 Hours] 6.1 Conservative and Post operative management of following conditions- 6.1.1 Lateral retinacular release, chondroplasty	1	Must know	LE/SE /SA
	6.1.2 ACL and PCL reconstruction surgeries	1		
	6.1.3 Meniscectomy and meniscal repair	1		
	6.1.4 Plica syndrome, patellar dysfunction and Hoffa's syndrome	1		
	6.1.5 TKR	1		
	6.1.6 Patellar tendon ruptures and Patellectomy	1		
7.	**Ankle and foot:** 7.1 Conservative and Post operative management of following conditions- 7.1.1 Ankle instability.	1	Must know	LE/SE /SA
	7.1.2 Ligamentous tears	1		
	7.1.3 Plantar fasciitis	1		
	7.1.4 Calcaneal Spur	1		
8.	**Amputations:** [3Hours] 8.1 Definition, levels, indications, types, PT assessment, aims, management pre and post operatively.	2	Must know	LE/SE /SA
	8.2 PT management with emphasis on stump care and bandaging.	1		
	8.3 Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.	1		
9.	**Introduction to Bio-Engineering;** [6 Hours] 9.1 Classification of Orthoses and prostheses;	**2**	Must know	SE/SA
	9.2 Biomechanical principles of orthotic and prosthetic application; Designing of upper extremity, lower extremity and spinal orthosis, indications and check	**1**	Must know	

	out;			
	9.3 Designing of upper extremity and lower extremity prostheses, indications and check out;	**1**		
	9.4 Psychological aspects of orthotic and prosthetic application;	**1**		
	9.5 Prescription and designing of footwear and modifications; Designing and construction of adaptive devises.	**1**		
10.	**Sports Physiotherapy :** [5 Hours] 10.1. Physical fitness.	**1**	Must know	LE/SE /SA
	10.2 . Stages of healing, treatment guidelines, repair prevention and rehabilitation of the following soft tissue injuries - 10.2.1 Rotator cuff injuries. Supraspinatus and Bicipital tendonitis.	**1**		
	10.2.2 Tennis and Golfer's elbow.	**1**		
	10.2.3 Dequervain's tenosynovitis. Trigger and Mallet finger. Wrist sprains.	**1**		
	10.2.4 Collateral and Cruciate injuries of knee. Meniscal injuries of knee.	**1**		
	10.2.5 Pre patellar and Subacromial bursitis	**1**		
	10.2.6 Hamstring strains, Quadriceps contusion,	**1**		
	10.2.7 Lateral ligament sprain of ankle and TA rupture.	**1**		
	10.2.8 Plantar fasciitis	**1**		

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books

1. Tidy's physiotherapy.
2. Textbook of orthopedics- Cash.
3. Clinical orthopedic rehabilitation- Brotzman.
4. Orthopedic physiotherapy - Jayant Joshi.

5. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz
6. Sports physiotherapy- Maria Zuluaga
7. Orthopaedic Physical Assessments – David J. Magee

COURSE NAME : PHYSIOTHERAPY IN GENERAL SURGICAL CONDITIONS & WOMEN'S HEALTH /OBG-A (Theory)

Course	Max marks		Total marks	Hours per week			Credits	See- evaluation method
	IA	SEE		L	T	P		
Physiotherapy in General Surgical Conditions & Women's Health /OBG-A	40	60	100	3	-	-	3	Written -60 marks

Theory-45 hrs

Unit	Topic	Number of hours	Level of importance	Type of question
1	Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in child care (movement therapy) .	5	Must know	LE/SE/SA
2	Geriatrics – handling of old patients and their problems.	5	Must know	LE/SE/SA
3	Complication common to all operations	2	Must know	LE/SE/SA
4	Abdominal incisions.	1	Must know	SE/SA
5	Physiotherapy in pre and post-operative stages.	1	Must know	LE/SE/SA
6	Operations on upper G.I.T.- oesophagus, stomach, duodenum	1	Must know	LE/SE/SA
7	Operations on large and small intestine – Appendisectomy, cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, hernioraphy, hernioplasty.	1	Must know	LE/SE/SA
8	Physiotherapy in dentistry	1	Nice to know	SE
9	Burns and its treatment – physiotherapy in burns, skin grafts, and reconstructive surgeries.	3	Must know	LE/SE/SA
10	Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars-U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper-granulated	1	Must know	SE/SA

	Scars Keloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues.			
11	Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases.	6	Must know	LE/SE/SA
12	Physiotherapy in dermatology - Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Massage maneuvers for cosmetic purpose of skin; use of specific oil as medium; Care of anesthetic hand and foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices.	3	Good to know	SE/SA
13	ENT – sinusitis, non-suppurative and chronic suppurative otitis media, osteosclerosis, labrynthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeo – laryngectomy, facial palsy.	2	Must know	SE/SA
14	OBG	10	Must know	LE/SE/SA
15	Applied yoga in General Medicine & General Surgery conditions – Rationale of Yoga and Physiotherapy, Therapeutic benefits of Yoga	1	Nice to know	SE

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
3. The Brompton Guide to chest physiotherapy DU Gasket [Completed]

4. Physical Rehabilitation Assessment and Treament – O'Sullivan Schmitz
5. Elements in Pediatric Physiotherapy – Pamela M Eckersley
6. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky
7. Cardiao pulmonary Symptoms in physical Therapy practice Cohen and Michel
8. Chest Physiotherapy in Intensive Care Unit by Mackenzi
9. Cash's Text book of General Medicine and Surgical conditions for Physiotherapists.
10. Physical Therapy for the Cancer patient by M.C Garvey
11. Physiotherapy in Obstetrics and Gynecology by Polden.

SEMESTER- VI

PHYSIOTHERAPY IN ORTHOPEDICS & SPORTS-II B (Practical)

Course Description: The course in orthopaedics and sports physiotherapy provides students with the fundamental principles for Physiotherapy diagnosis and treatment of the diseases and injuries of the musculoskeletal system that they will need during their foundation training.

Course Objectives

On completion of the course, students shall demonstrate the ability to (Practical)

- Approach patients in a professional manner
- Identify the Indications and uses of the various assistive devices, orthopedic implants, immobilisers, surgical procedures for common Orthopaedic conditions
- Obtain the medical and surgical history and perform examination of diseases and injuries of the musculoskeletal system.
- Perform primary management & first aid; know the indications and contraindications of the planned management.
- Make assessments of possible complications of the condition.
- Identify and describe obvious fractures or luxations on the basis of X-ray images
- Identify and describe common degenerative conditions such as osteoarthritis of the hip or knee on the basis X-ray images
- Perform appropriate mobilization techniques

Sixth Semester (37-42 months)			
Sl. No.	**Course Titles**	**Hours**	**Weekly class hours**
		Practical	
BPT-030	Physiotherapy in Orthopedics & sports II B	60	4

Practical

UNIT	TOPIC	Number of Hours	Level of Importance	Type of question
1	**Shoulder joint :** 1.1 PT Assessment and PT management.	10	Must Know	LC/SC
2	**Elbow and forearm:** 2.1 PT Assessment and PT management.	5	Must Know	LC/SC
3	**Wrist and Hand:** 3.1 PT Assessment and PT management.	5	Must Know	LC/SC
4	**Knee:** 4.1 PT Assessment and PT management.	13	Must Know	LC/SC
5	**Amputations:** 5.1 PT assessment and management of Amputations.	7	Must Know	LC/SC
6	**Introduction to Bio-Engineering** 6.1 Orthotics and Prosthetics.	**10**	Must Know	LC/SC
7	**Sports Physiotherapy :** 7.1 PT assessment and management of Sports injuries	**10**	Must Know	LC/SC

PRACTICAL

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

4. Bedside case presentations and case discussions
5. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.
6. Detailed Orthopaedic Physical Assessment of Individual joints.

SEMESTER-VIII

(43-48 MONTHS)

SEMESTER-VIII (43-48 MONTHS)

Sl. No	Category	Course Name	Max Marks		Total Marks	Hours per week				Credits
			IA	SEE		L	T	P	R	
1	Core	Community& Preventive Physiotherapy - A	40	60	100	2	1	-	-	3
2	Core	Health Promotion, Fitness & Wellness	40	60	100	2	-	2	-	3
3	Core	Administration & Teaching Skills	40	60	100	2	-	-	-	2
4	Core	Community & Preventive Physiotherapy - B	40	60	100	-	-	4	-	2
5	Core	Research Project	40	60	100	-	-	-	8	4
6	SEC	Clinical Training-V	20	30	50	-	-	9	-	3
Total					550					17

COURSE NAME: COMMUNITY& PREVENTIVE PHYSIOTHERAPY – A (Theory)

Course Name	Max Marks	Total Marks	Hours per week	Credits	See-evaluation

	IA	SEE		L	T	P	R		method
Community& Preventive Physiotherapy - A	40	60	100	2	1	-	-	3	Written 60

A-Theory

Unit	Topic	Number of hours	Level of importance	Type of question
1	Rehabilitation: Definition, Types.	1	Must know	SE/SA
2	Community: Definition of Community, Multiplicity of Communities, The Community based approach, Community Entry strategies, CBR and Community development, Community initiated versus community oriented programme, Community participation and mobilization.	2	Must know	LE/SE/SA
3	Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR.	2	Must know	LE/SE/SA
4	Principles of Community based Rehabilitation. W.H.O.`s policies-about rural health care-concept of primary /tertiary health centers-district hospitals etc-Role of P.T.-Principles of a team work of Medical person/P.T./O.T. audiologist/speech therapist /P.&O./vocational guide in C.B.R. of physically handicapped person , Agencies involved in rehabilitation of physical handicapped - Legislation for physically handicapped. Concept of multipurpose health worker. Role of family members in the rehabilitation of a physically handicapped.	3	Must know	LE/SE/SA
5	Planning and management of CBR Programmes, CBR Programmed planning and management, Ownership and Governance, Decentralization and	2	Must know	LE/SE/SA

	CBR, Management of CBR, Programmed sustainability, Communication and Coordination, Community participation, mobilization and awareness, CBR programme influence on promoting and developing public policies.			
6	Disability: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Causes of disability, Types of disability, Prevention of disability, Disability in developed countries, Disability in developing countries. Disability Surveys: Demography. Screening: Early detection of disabilities and developmental disorders, Prevention of disabilities- Types and levels.	4	Must know	LE/SE/SA
7	Disability Evaluation: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data, Uses of evaluation findings.	4	Must know	LE/SE/SA
8	Role of Government in CBR: Laws, Policies, Programmes, Human Rights Policy, Present rehabilitation services, Legal aspects of rehabilitation.	1	Must know	SE/SA
9	Role of Social work in CBR: Definition of social work, Methods of social work, History of social work, Role of social worker in rehabilitation.	1	Must know	SE/SA
10	Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies a. National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockfeller, Ford foundation, CARE, RED CROSS.	1	Must know	SE/SA
11	National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker	2	Must know	SE/SA
12	Role of Physiotherapy in CBR: Screening for	2	Must	LE/SE/S

	disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuro-musculoskeletal and cardiothoracic disabilities.		know	A
13	Screening and rehabilitation of paediatric disorders in the community: Early detection of high risk babies, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, Down's Syndrome, Muscular Dystrophies etc., Prevention and rehabilitation of mental retardation and Behavioral disorders, Immunization programmes, Early intervention in high risk babies, Genetic counseling.	4	Must know	SE/SA
14	Extension services and mobile units: Introduction, Need, Camp approach.	1	Must know	SE/SA
15	Vocational training in rehabilitation: Introduction, Need, Vocational evaluation, Vocational rehabilitation services.	2	Must know	SE/SA
16	Geriatrics- Physiology of Aging /degenerative changes-Musculoskeletal /Neuromotor/cardio-respiratory/Metabolic, Endocrine, Cognitive, Immune systems. Role of Physio Therapy in Hospital based care, Half-way homes, Residential homes, Meals on wheels etc. Home for the aged, Institution based Geriatric Rehabilitation. Few conditions:- Alzheimer's disease, Dementia, Parkinson's Disease, Incontinence, Iatrogenic drug reactions, etc. Ethics of Geriatric Rehabilitation.	3	Must know	LE/SE/SA
17	Industrial Health & Ergonomics [10 hours] - Occupational Hazards in the industrial area -- Accidents due to 17.1. Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation. 17.2. Chemical agents-Inhalation, local action, ingestion. 17.3. Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration &	10	Must know	LE/SE/SA

	ergonomic evaluation of work place-mechanical stresses per hierarchy – i. Sedentary table work –executives, clerk. ii. Inappropriate seating arrangement-vehicle drivers. iii. Constant standing- watchman-Defense forces, surgeons, iv. Over-exertion in laborers,-common accidents –Role of P.T.-Stress management. 17.4. Psychological hazards- e.g.-executives, monotonicity & dissatisfaction in job, anxiety of work completion with quality, Role of P.T. in Industrial setup & Stress management-relaxation modes. 17.5. Biological Hazards			

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

Recommended books:

1. Text book of rehabilitation- Sunder
2. CBR- Piyush Sharma
3. Text book of CBR- Malcolm Peat
4. Essentials of Community-based Rehabilitation. Satya Bhushan Nagar (2017), JAPEE
5. Rehabilitation Medicine by Howard A Rusk.
6. Rehabilitation Medicine by Joel A De lisa
7. Text book of Community Medicine- Park
8. Physical rehabilitation- Susan o' Sullivan

9. A Concise Textbook of Community Based Rehabilitation, *Satya Bhushan Nagar, Himanshu Publications ISBN: 9788179064955, 8179064956*

COURSE NAME: HEALTH PROMOTION, FITNESS & WELLNESS (Theory)

Course Name	**Max Marks**		**Total Marks**	**Hours per week**				**Credits**	**See-** evaluation method
	IA	**SEE**		**L**	**T**	**P**	**R**		
Health Promotion, Fitness & Wellness	40	60	100	2	-	2	-	3	Written 60

Theory

Unit	Topic	Number of hours	Level of importance	Type of question
1	Prevention practice: a holistic perspective for physiotherapy a. Defining Health b. Predictions of Health Care c. Comparing Holistic Medicine and Conventional Medicine d. Distinguishing Three Types of Prevention Practice.	2	Must know	LE/SE
2	Healthy People a. Definition of healthy people b. Health education Resources c. Physiotherapist role for a healthy community.	2	Must know	SE/SA
3	Key concepts of fitness d. Defining & Measuring Fitness e. Assessment of Stress with a Survey f. Visualizing Fitness g. Screening for Mental and Physical Fitness h. Body Mass Index calculations.	2	Must know	LE/SE/SA
4	Fitness training a. Physical Activities Readiness Questionnaire b. Physical Activities Pyramid c. Exercise Programs	6	Must know	LE/SE/SA

	d. Evidence-Based Practice. e. Health, fitness, and wellness issues during childhood and adolescence			
5	Health, fitness, and wellness during adulthood	1	Must know	SE/SA
6	Women's health issues: focus on pregnancy:	8	Must know	LE/SE/SA
7	Prevention practice for older adults	1	Must know	SE/SA
8	Resources to optimize health and wellness	1	Must know	SE/SA
9	Health protection.	1	Must know	SE/SA
10	Prevention practice for musculoskeletal conditions	1	Must know	LE/SE/SA
11	Prevention practice for cardiopulmonary conditions	1	Must know	LE/SE/SA
12	Prevention practice for neuromuscular conditions	1	Must know	LE/SE/SA
13	Prevention practice for integumentary disorders	1	Must know	LE/SE/SA
14	Prevention practice for individuals with developmental disabilities	1	Must know	LE/SE/SA
15	Marketing health and wellness.	1	Good to know	SE/SA

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

Maximum marks:60					**Duration**
Type of question	Number of questions	Number of Questions to be answered	Marks for each question	Total	
Long Essay (LE)	03	02	10	20	150 minutes
Short Essay (SE)	07	05	04	20	
Short answers (SA)	12	10	02	20	
			Total	60	

NAME OF THE COURSE: ADMINISTRATION & TEACHING SKILLS

Course Name	**Max**	**Total**	**Hours per**	**Credits**	**See-** evaluation

	Marks		Marks	week					method
	IA	SEE		L	T	P	R		
Administration	20	30	100	1	-	-	-	2	Written 60
Teaching Skills	20	30		1					

Theory

Unit	Topic	Number of hours	Level of importance	Type of question
ADMINISTRATIION				
1	Branches of administration, Nature and scope of administration, How to be an effective administrator, Planning hospital administration as part of a balanced health care program.	1	Must know	LE/SE
2	Principles of hospital administration and its applications to physiotherapy.	1	Must know	LE/SE
3	Planning and organization: Planning cycle, Principles of organizational charts, Resource and quality management, planning change -innovation	2	Must know	LE/SE
4	Financial issues including budget and income generation	1	Nice to know	SE/SA
5	Hospital administration: Organization, Staffing, Information, Communication, Coordination, Cost of services, Monitoring and evaluation.	3	Must know	LE/SE/SA
6	Organization of physiotherapy department: Planning, Space, Manpower, Other basic resources.	3	Must know	LE/SE/SA
7	Organizing meetings, committees, and negotiations	1	Good to know	LSE/SA
8	Personnel management: Personnel performance appraisal system, Quality care delivery from the staff.	3	Must know	LE/SE/SA
TEACHING SKILLS				
1	Concepts of teaching and learning	4	Must know	LE/SE
2	Taxonomy of education		Must know	LE/SE
3	Curriculum development	4	Must know	LE/SE
4	Principles and methods of academic and	2	Must know	SE/SA

	clinical teaching			
5	Measurement and evaluation	1	Must know	LE/SE/SA
6	Guidance and counseling	1	Good to know	SE/SA
7	Faculty development program	1	Nice to know	SE
8	Administration in clinical setting	1	Must know	SE/SA
9	Use of A-V aids in teaching	1	Must know	SE

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

Recommended books

1. Pedagogy in Physiotherapy education by C.S. Ram, AITBS Publishers, India.
2. Education Technology: Teaching Learning.Y.K.Sing,-T.K.Sharma, Brijesh Upadhya.2008.APH Publishing corporation, Delhi,India.

NAME OF THE COURSE: COMMUNITY& PREVENTIVE PHYSIOTHERAPY-B (Practical)

Course Description: The subject serves to integrate the knowledge gained by the students in community medicine and other areas with skills to apply these in clinical situations of health and disease and its prevention. The objective of the course is that after the specified hours of demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

Eighth Semester (43-48 months)			
Sl. No.	**Course Titles**	**Hours**	**Weekly class hours**
		Practical	
BPT-040	Community & Preventive Physiotherapy – B	60	4

Practical

Sl. No.	**Topic**	**Number of Hours**
1.	Community Posting 1. Palliative care- Vamanjoor, 2. Geriatric rehabilitation – Olavinahally, 3. Paediatric care – Vitla	10
2.	Field visits to urban and rural PHC's	10

3.	Visits to regional rehabilitation training center.	5
4.	Regular mobile camps.	10
5.	Disability screening.	5
6.	Disability surveys in villages	5
7.	Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio-respiratory, pediatric, gynecological and geriatric problems in community.	5
8.	Fabrication of low cost assistive devices with locally available materials.	5
9.	Demonstration of evaluation and prescription techniques for ambulatory and assistive devices.	5
	Total Hours	60

RESEARCH PROJECT

The project may be a case study or of recent technique or literature reviews and etc. to make the student to have research mind and to facilitate for higher studies. The project can be done individually or by a group of students limited to maximum of 5. Each project will be mentord by a faculty. Students will undergo all the procedures of research work as per University guidelines.

Course Name	Max Marks		Total Marks	Hours per week				Credits	SEE
	IA	SEE		L	T	P	R		
Research Project	40	60	100	-	-	-	8	4	Dissertation presentation and defense. 60 marks.

INTERNSHIP

The internship time period provides the students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in both areas. Students will participate in advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 7 hours per day.

Initial Assessment Documentation: Clinical staff must document the following information:

a. Initial assessment documented based on SOAP format.
b. Subjective examination (symptomatic)
c. Objective examination (measureable, observable)
d. Action/Analysis (interpretation of current condition/intervention provided)
e. Plan of action
f. Written or verbal feedback to the client or other relevant carers
g. Discharge plan documented
h. Agreement to treatment plan by patient or "person responsible"

2. **Progress Documentation:** Progress documentation may include the following information:

   a. Any individual intervention should be documented in SOAP format (including response to intervention/s using outcome measures)

   b. Oral consent obtained and documented when there is a significant change in treatment/ treatment options/ status of patient's health.

   c. Written consent obtained for designated invasive procedures

   d. Change in status or events that may affect discharge plans/goals

   e. Documented consultation with key clinical team members

3. Exit examination: Intern shall undergo an exit examination on completion of the 6 month period of internship in order to ensures the student has acquired all the essential skill for the professional practice.

APPENDIX

APPENDIX- I

Guideline to reports on information gathered from communication with patients and information retrieve from report

1. Biodata of patient
2. Patient's problems
3. Diagnosis of patient's condition
4. History of patient's condition
5. Patient's general health

Any relevant information regarding patient's problems and condition

APPENDIX - II

KNOWLEDGE AND SKILLS LOG OF STUDENTS

The following are skills that the students <u>SHOULD PRACTICE AND DEVELOP</u> during this clinical posting *(Students are required to take responsibility to prepare and ensure that they can perform the skills accurately and safely on patients. They are required to assess themselves if they required further practice or not in performing the skill. They are responsible in getting this feedback and confirmation from the Supervisor)*			
Skills Required	**Require further practice**	**Accurate & safe**	**Signature**
Assessment Skills:			
Treatment Skills:			
Documentation: • Ability to document patient's personal data, complaints, health problems and social background systematically and coherently • Able to document assessment findings that can be understood by all physiotherapists • Able to document the treatment provided to the patients (Students have to take initiative to document every patient that they have seen and to improve on the documentation each week and presented to the Clinical Supervisor for feedback as and when required)			

APPENDIX-III:

CLINICAL ASSESSMENT FORM FOR CLINICAL TRAINING

Name of the Student: Date:

Year: Semester:

Name of the Examiner: Final Marks:

The distribution of marks

		Overall Score	%	Student's Score	%
Part 1	Communication	16	19		
Part 2	Professionalism	28	33		
Part 2	Assessment and Handling skills	16	19		
Part 3	Treatment and Handling skills	16	19		
Part 4	Documentation	8	10		
	Total	84	100		

Criteria for Assessment of Clinical Training

Grade		Criteria
4	Excellent	Demonstrate excellent performance and fully achieved all the learning outcomes during the clinical placement. Do not require supervision and guidance most of the time to achieve level of independence in clinical practice.
3	Good	Demonstrate good performance and 75% of the learning outcomes achieved. Require minimal supervision and guidance to achieve level of independence in clinical practice.
2	Fair	Demonstrate satisfactory performance and 50% of the learning outcomes achieved. Require moderate supervision and guidance to achieve level of independence in clinical practice.
1	Poor	Demonstrate poor and inconsistent performance and only 25% of the learning outcomes achieved. Require a lot of supervision and guidance to achieve level of independence in clinical practice.
0	Very Poor	Demonstrate very poor performance or have not achieved the learning outcomes. Require maximum supervision and guidance to achieve level of independence in clinical practice

Mark according to the criteria for Assessment above, put a tick

(√) on the appropriate column for each category

PART I - Communication

PART I - Communication						
	Learning outcome By the end of this placement the student will able to:	**0**	**1**	**2**	**3**	**4**
1	**Communicate effectively with the patient and /or family/carer** • demonstrate an appropriate level of confidence in approaching patients and establishes a • rapport with patients and /or family/carer • aware of and demonstrate verbal and non-verbal skills and listening skills in • interactions with patients and /or family/carer • explain in simple terms how the assessment and treatment skill is carried out • retrieve information about patient's conditions, problems and impairment relating to the condition • respect the rights, dignity and individuality of the patient and /or family/carer.					
2	**Explain in simple terms how the assessment and treatment skills are carried out**					
3	**Retrieve information about patient's conditions, problems and impairment** • appropriate information gathered in relation to condition, physcial and psychosocial aspect • comprehensive information retrieved					
4	**Demonstrate appropriate presentation skills** • presenting case to clinicians/lecturers • speak audibly and clearly • systematic in presentation with concisely and informative • attempt to answer questions on the topic					
	TOTAL:					

Part-II: Professionalism

PART II - Professionalism						
	Learning outcome By the end of this placement the student will able to:	**0**	**1**	**2**	**3**	**4**
1	**Demonstrate adequate preparation for placement** • show evidence of pre-placement reading and ongoing placement preparation • has basic knowledge of skills encountered on placement					
2	**Identify their own learning needs** • identify learning needs and areas for self improvement					
3	**Demonstrate initiative and willingness to learn** • show active interest through appropriate questioning and uses available opportunities for • practice / learning • use available opportunities for practice/learning					
4	**Act on and accept guidance and/or feedback** • demonstrate an appropriate professional response to feedback • modify practice according to feedback					
5	**Demonstrate an awareness of their own limitations and seek help where necessary** • report all findings to supervising clinician • requesting supervising clinician to check on the skill					
6	**Maintain patient confidentiality** • comply with best practice in this area • do not remove patient notes from the placement site					
7	**Demonstrate appropriate professional behaviours and attitudes** • dress professionally according to local policy • be punctual for clinical duties and appointments • complete delegated tasks fully and properly					
TOTAL						

PART-III- Assessment and Handling Skills

PART III – Assessment and Handling Skills						
	Learning outcome By the end of this placement the student will able to:	**0**	**1**	**2**	**3**	**4**
1	**Demonstrate appropriate background knowledge** • answer basic questions on core knowledge of skills • justify assessment with information gather from lectures and reading					
2	**Perform assessment skill** • explain purpose and method of the assessment • perform appropriate assessment techniques accurately • maintain a safe environment: close proximity to patients during assessment					
3	**Demonstrate appropriate handling skills** • position self optimally when executing the assessment skill • aware of self-ergonomics and safety • maintain safety of the patient • - employ careful and reflective handling of patients during assessment					
4	**Ensure patient comfort and dignity when performing the skill** • position patients for their comfort and dignity during assessment • minimise physical and psychological stress during assessment • - using appropriate touch during assessment					

TOTAL:					

PART-IV : Treatment and Handling Skills

PART IV– Treatment and handling Skills					
Learning outcome By the end of this placement the student will able to:	**0**	**1**	**2**	**3**	**4**
Justify the treatment skills based on basic core sciences • able to explain the indications for the treatment skill prescribed by supervisor • - demonstrate evidence of links between theory and practice					
Perform the treatment skill • explain purpose and method of treatment • perform skill effectively • - maintain a safe environment					
Demonstrate appropriate manual handling skills for self and patient when performing the skill • demonstrate appropriate manual handling skills and assists with manual handling tasks • position self optimally when treating patients (awareness of ergonomics) • demonstrate safety in the use of equipment under supervision					
Implement safe practice during treatment • check contraindications prior to treatment • check equipments conform to patients' needs • ensure a safe environment during and after treatment • always give standard warnings to patients about treatments • carry out standard checks on patients after treatment					

TOTAL:					

PART V: Documentation

PART V - Documentation						
	Learning outcome By the end of this placement the student will able to:	**0**	**1**	**2**	**3**	**4**
1	**Document assessment findings** • clarity in the documentation of assessment findings that is fully understood by all professionals					
2	**Documentation of treatment provided** • appropriate to the treatment technique given • appropriate dosage documented relating to the treatment technique • location in terms of body parts					
TOTAL:						

STATEMENT BY STUDENT

- I have had the opportunity to discuss progress during my placement and I have read and discussed this report with my Examiner

Student's Signature: …… Date: ……

Examiner's Signature: …… Date: ……