SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH
(A Deemed to be University Declared under Section 3 of UGC Act, 1956)
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CHOICE BASED CREDIT SYSTEM
(CBCS)

(With effect from 2017-2018 batches)

Curriculum for Bachelor of Physiotherapy (BPT)

Dean
Faculty of Allied Health Sciences
Sri Devaraj Urs Academy of
Higher Education & Research
Tamaka, Kolar-563 101

Approved as per BOM-41-2016,(Resolution No-XLI-05(3)/16) Dated-19/10/2016

SDUAHER

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

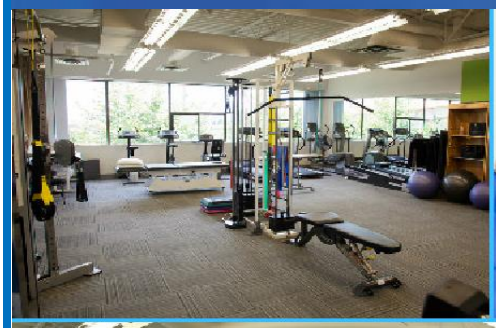
(Declared as Deemed - to - be University u/s 3 of the UGC Act, 1956)

Regulation & Syllabus

BACHELOR OF PHYSIOTHERAPY

REVISED REGULATIONS AND CURRICULUM WITH CBCS

2017-18 (BPT)







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DEPARTMENT OF PHYSIOTHERAPY

Handbook of
CHOICE BASED CREDIT SYSTEM
(CBCS, 2017-18)

For Bachelor of Physiotherapy (BPT) program

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH
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At a glance this logo is abstract, yet it contains the vital ingredients for an institution like Sri Devaraj Urs Academy of Higher Education and Research.

The institution's medical background, humanitarian values, Compassion, approachability, social commitment and the subsequent research towards the most precious thing, the human life, is the core theme.

The graphic form of a person in the center of a bud represents the humanity. It denotes the growing process of life and its existence. And the two hands safeguarding them show the care and a sense of security. It is also capable of holding something within the vast expanse of knowledge by the University for the People's Benefit. Hence, the motto "Knowledge for Posterity" is very appropriate and gives a punch in Red. The four light blue half circles (smaller to bigger) depict the unending quest for knowledge and imparting it to a wider horizon, growing higher and higher.

And finally, the whole unit is embedded in a "D" shaped graphics template as background to give it a corporate identity.

COLORS USED:

Deep Blue: Credible, Confident and dependable. Represents Peace, tranquility, stability, harmony, trust, security, cleanliness and loyalty.

Light Blue: For sky and water (colour scheme for 4 half circles)

Red: A dominant colour for strengths.

Green: For nature, health and generosity. Its cool quality soothes and has great healing powers.

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH

VISION

"UNIVERSITY OF EXCELLENCE - KNOWLEDGE FOR POSTERITY"

MISSION

Ø To Be A Global Center Of Excellence For Teaching, Training, and Research In The Field of Higher Education.

Ø To Inculcate Scientific Temper, Research Attitude And Social Accountability Amongst Faculty And Students.

Ø To Promote With Value Based Education For The Overall Personality Development and Leadership Qualities To Serve The Humanity.

OBJECTIVES

¨ ØTo provide need-based infrastructure and facilities to students to become responsible professionals with social commitment and accountability.

¨ Ø To implement effectively innovative programmes in teaching learning and evaluation.

¨ Ø To impart scientific and socio-cultural temperament among students to forge National identity and needs.

¨ Ø To provide instruction and training in basic and advanced branches of learning.

¨ Ø To provide facilities for research for the advancement and dissemination of knowledge.

¨ Ø To undertake extramural studies, consultancy, extension programmes and field outreach services for the development of society.

¨ Ø To collaborate with other Universities, Institutions of excellence and Research Organizations within the country and outside for the purpose of teaching, training, and research.

¨ Ø To undertake need-based activities for the betterment of socially and educationally backward society.

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Department of Physiotherapy

Vision

"Global excellence in physiotherapy education, health care and research performance"

Mission

1. Providing outstanding learning environment for Physiotherapy education to enhance quality of life, health, fitness and mobility related to human movement.

2. Educate for client-centered, evidence-informed, inter-professional practice.

3. Produce competent and caring physiotherapist through excellent teaching, patient care and innovative therapy research.

4. Educate and train in advanced Physiotherapy practice for future and current Physiotherapist.

5. Contribute to community health care, mobility enhancement and disability prevention.

6. Promote leadership in physiotherapy management.

Objectives

1. Physiotherapy Skills and Knowledge: To have competence in physiotherapy practice and advanced skills in patient care.

2. Patient Care: To practice and apply effective treatment techniques for the health disorders in general population and to promote wellness and mobility.

3. Communication Skills: To have an effective communication skill with an interprofessional healthcare team and patient caregivers.

4. Ethics: Physiotherapy professionals and students should demonstrate the highest ethical values, integrity and professional values with transferency and accountability.

5. Expand Research: Ensure continuous progress in searching of innovation and excellence in research.

6. Social and Environmental Interest: Every physiotherapy professional and students should develop their full potential to contribute services towards community, society and environment as a whole.

Department of Physiotherapy
Sri Devaraj Urs Academy of Higher Education and Research
(Deemed to be a university- Declared under Section 3 of the UGC Act, 1956)
Tamaka, Kolar, Karnataka

REGULATIONS ON "CHOICE BASED CREDIT SYSTEM - 2017" for BPT PROGRAM

SHORT TITLE AND COMMENCEMENT:

These Regulations shall be called **"THE REGULATIONS ON CHOICE BASED CREDIT SYSTEM (CBCS) - 2017 FOR BPT PROGRAM OF SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH, TAMAKA, KOLAR.**

These Regulations shall come into force from the academic year 2017-2018, i.e., for the students getting admitted under the BPT program for 2017-18 academic year. These regulations are subject to such modifications as may be approved by the Academic Council from time to time. Sri Devaraj Urs Academy of Higher Education and Research supporting the CBCS model by offering the generic electives and ability enhancement courses for various courses under the institution.

1. Preamble

The Chairman, University Grants Commission (UGC) has communicated the decision of the Ministry of Human Resources Development to implement Choice Based Credit System (CBCS) from the academic session 2015-2016 in all Indian Universities to enhance academic standards and quality in higher education through innovation and improvements in curriculum, teaching-learning process, examination and evaluation systems.

Diversity in the system of higher education, and multiple approaches followed by universities towards curriculum, examination, evaluation and grading system has led to the lack of uniformity. While the Universities must have the flexibility and freedom in designing the examination and evaluation methods that best fits the curriculum, syllabi and teaching– learning methods, there is a need to devise a sensible system for awarding the grades based on the performance of students. Presently the performance of the students is reported using the conventional system of marks secured in the examinations or grades or both. The conversion from marks to letter grades and the letter grades used vary widely across the Universities in the country. This creates difficulty for the academia and the employers to understand and infer the relative performance of the students graduating from different universities and colleges in the country. Hence the UGC has recommended the implementation of CBCS in Universities.

The grading system is considered to be better than the conventional marks system and hence it has been followed in the top institutions in India and abroad. Introduction of a uniform grading system will facilitate student mobility across institutions within and across countries and also enable potential employers to assess the performance of students. To bring in the desired uniformity, in grading system and method for computing the cumulative grade point average (CGPA) based on the performance of students in the examinations, the UGC has formulated the guidelines and communicated it to all Universities for adoption.

UGC, subsequently, has provided a set of Model curricula and syllabi for CBCS programmes under the Faculties of Arts, Humanities and Sciences providing the academic flexibility for Universities to make changes/innovation up to 20% in the syllabi of these programmes. It has also specified that all UG programmes should be for a minimum of three years duration. UG Programmes with 120-140 credits in the 180 annual teaching days system shall be designated as regular B.A/B.Sc./B.Com., B.B.A etc., Those UG programmes with 140-160 credits or more with fully supported higher number of annual teaching days can be designated as B.A (Hons)/ B.Sc.(Hons) /B.B.A(Hons)/B.Com(Hons) etc.,

SDUAHER has taken the proactive lead in bringing about the academic reform of introducing CBCS for the programmes offered under the Faculties of Allied Health Sciences, Physiotherapy and other courses. In compliance to the above, Sri Devaraj Urs Academy of Higher Education and Research (SDUAHER) has notified with the vide order No. SDUAHER/KLR/ADMN/2063/16-17 dated 20.10.16 and introduced CBCS for undergraduate programme in order to achieve academic excellence, quality improvement and as administrative reforms.

2. CBCS – Definition and benefits:

Choice Based Credit System is a flexible system of learning. 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.

2. Definitions of Key Words:

i. **Academic Year**: Two consecutive (one odd + one even) semesters constitute one academic year.

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

iii. **Course**: Usually referred to, as papers is a component of a programme. All courses need not carry the same weight. The courses should define learning objectives and learning outcomes. A course may be designed to 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.g

iv. **Credit Based Semester System (CBSS)**: Under the CBSS, the requirement for awarding a degree or diploma or certificate is prescribed in terms of number of credits to be completed by the students.

v. **Credit Point**: It is the product of grade point and number of credits for a course.

vi. **Credit**: A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week.

vii. **Grade Point**: It is a numerical weight allotted to each letter grade on a 10-point scale.

viii. **Letter Grade**: It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, D and RA

ix. **First Attempt**: A student who has completed all formalities of the semester becomes eligible to attend the examinations and has passed in first sitting: such attempt shall be treated as first attempt.

x. **Programme**: An educational programme leading to award of a Degree, diploma or certificate.

xi. **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.

xii. **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.

xiii. **Semester**: Each semester will consist of 100 working days. The odd semester may be scheduled from August to January and even semester from February to July.

xiv. **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 and CGPA earned till that semester.

4. Semester System and Choice Based Credit System

The semester system accelerates the teaching-learning process and enables vertical and horizontal mobility of students in learning. 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, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning.

5. REGULATIONS & URRICULUM Bachelor of Physiotherapy – BPT , (2017)

5.1. TITLE OF THE COURSE

Bachelor of Physiotherapy (BPT)

*5.1.1. Definition of Physiotherapy (*Ministry of Health and Family Welfare, India, 2017*)*

"Physiotherapy means a system which includes comprehensive examination, treatment, advice and instructions to any persons preparatory to or for the purpose

of or in connection with movement/functional dysfunction, bodily malfunction, physical disorder, disability, healing and pain from trauma & disease, physical and mental conditions using physical agents, activities & devices including exercise, mobilization, manipulations, electrical & thermal agents and other electro

therapeutics for prevention, screening, diagnosis, treatment, health promotion and fitness."

5.1.2. Definition of physiotherapist (World health organization, 2015)

"Physiotherapists assess, plan and implement rehabilitative programs that improve or restore human motor functions, maximize movement ability, relieve pain syndromes, and treat or prevent physical challenges associated with injuries, diseases, and other

impairments. They apply a broad range of physical therapies and techniques such as movement, ultrasound, heating, laser and other techniques. They may develop and implement Programmes for screening and prevention of common physical ailments and disorders"

5.2. ELIGIBILITY FOR ADMISSION

A Candidate seeking admission to Bachelor of Physiotherapy programme

- Candidates who have completed 17 years of age are eligible to apply.
- The candidate must have passed 10+2, A Level, IB, American 12th Grade or equivalent with Physics, Chemistry, English, and Biology individually.
- The candidate should secure minimum of 45% marks together (aggregate) in Physics, Chemistry, and Biology for general category.
- The minimum marks for the purpose of eligibility shall be forty percent (40% aggregate in PCB) in optional subjects in case of students belonging to SC/ST and OBC students from Karnataka or as decided by the Government of Karnataka. Provided further that, the student shall have studied and passed English as one of the subjects.
- The candidate should have passed both years (11^{th} & 12^{th} grade) in the higher secondary examination in the respective board wherever it applies.

OR

- Shall have passed two years Pre University examination conducted by the pre-University board of Karnataka state, with English as one of the subject and physics, chemistry, and biology as optional subjects.

OR

- Shall have passed any other examination conducted by Boards/councils/intermediate examination established by state Government/central Government and recognized as equivalent to two year pre University examination by Association of Indian Universities (AIU) with English as one of the subjects and physics, chemistry and biology as optional subjects and the candidate shall have passed subjects of English, physics, chemistry and biology individually.

OR

- Shall have passed an intermediate examination in science of an Indian university/ Boards/council or other recognized examining bodies with physics, chemistry, and biology which shall include a practical test in these subjects and also English as a compulsory subject. The candidate shall have passed subjects of English, physics, chemistry, and biology individually.

OR

- Candidates with regular three years diploma in Physiotherapy (DPT) course with compulsory 6-month rotatory internship from state/central/foreign recognized board.

5.2.1. INELIGIBILITY CRITERIA TO ADMISSION

Candidates who have completed a diploma or vocational course through correspondence/distance education are not eligible for BPT program.

5.3. DURATION OF THE COURSE:

The total duration of the course shall be Four and half years which includes four years course period (eight semesters) and a minimum of six months of rotatory Internship.

5.3.1. TOTAL COURSE DURATION.

The total course duration shall be double the course time; i.e. the candidate shall complete all the semesters before 8 years (i.e. 16 semesters) from the date of course commencement excluding internship period. The duration will be calculated based on the semester duration not on the starting date to ending date. A candidate who failed to complete the course within 8 years (16 semesters) will be withdrawn admission and further he/she may retake admission as fresh enrollment if an eligibility criteria permits. The candidate's current semester and completion of the year have to be calculated well in advance at the end of every semester to discharge the student at earliest instead of allowing the ineligible student to next semester.

5.4. COURSE CURRICULUM

The Curriculum and the syllabus for the course shall be as prescribed. The curriculum is subject to modifications by the recommendations of Academic Board from time to time if necessary.

5.4.1. CALENDAR OF EVENTS

The calendar of events in respect of the programme for each respective academic year shall be determined and notified by the university from time to time. The examinations shall be conducted at the end of each semester.

5. 5. MEDIUM OF INSTRUCTION:

The medium of instruction and examination (theory, practical, internal, & viva voce) shall be in English.

5.6. SCHEME OF EXAMINATION:

The scheme of the examination is semester wise. The four years course period consists of eight semesters. There shall be two internal assessment examinations in each semester followed by University examination at the end of each semester.

5.7. ATTENDANCE

- Each course comprising theory, Practical and tutorials shall be treated as a single unit for the purpose of calculation of attendance. A student shall have to attend a minimum of 75% attendance of the total instruction hours in a course (theory/practical/tutorials) in each semester from the date of commencement of the semester to last working day as notified by the University.

- The students shall be informed about their attendance status periodically (every month) by the Department of Physiotherapy. So that the students will be cautioned to make up the shortage. The Department of Physiotherapy shall submit the list of students who have been eligible to appear examinations and list of detained students due to a shortage of attendance by the end of the semester to the registrar & controller of examination.

- Students lacking in the prescribed attendance and progress in any subject(s) in theory and practical should not be permitted to appear for the examination. Such student shall repeat the course in which he/she is deficient with attendance.

5.8. INTERNAL ASSESSMENT:

- Regular internal assessment examinations should be conducted on each course in a semester. There should be a minimum of at least 2 internal assessments examinations in each semester, the number of examination on each course is left to the department. An average of the (Best) two internal assessment examinations should be taken into consideration during calculation of marks of internal assessment.

- The weightage given to the internal assessment is 20/25% out of the total marks assigned to the theory course.

- The student must secure at least 35% in each subject of the internal

examinations in both theory and practical examination of the subject to be eligible to appear semester examinations.

5.9. SCHEME OF EXAMINATION: PART 2.

There shall be examinations at the end of each semester as per the calendar of events notified by the university

5.9.1. VALUATION OF ANSWER SCRIPTS

Each written paper shall be valued by one internal examiner and one external examiner. Each practical examination shall be jointly conducted and evaluated by one internal examiner and one external examiner or two external examiners if there are no internal examiners. But the valuation should not be done by two internal examiners.

5.9.2. THIRD VALUATION

A theory paper subjected to the third valuation if the difference in marks awarded by two evaluators exceeds 15% and above. After the third evaluation, the 2 closest marks among the 3 valuations shall be averaged and awarded.

If the difference in the marks persists 15% and above after 3rd valuation, the average of all 3 valuation marks awarded by all 3 examiners shall be taken and will be awarded to the candidate.

5.9.3. REVALUATION

There is no revaluation permissible in the regulation

5.9.4. Conduct of Practical Examination.

- The practical examination shall commence immediately after final theory examination. The practical examination shall be conducted by 2 examiners who are experts in their subjects, one of them shall be an internal examiner and one of them shall be an external examiner. The external examiner shall be selected from an available panel of examiner list. The external examiner shall have preferably 3 years teaching experience after MPT from a recognized university and the internal examiner shall have a minimum of 1 years of teaching experience from the department of Physiotherapy. The practical examination in specialty papers like orthopedic/ neurological Physiotherapy, the examiner shall have same discipline in their post-graduation and teaching experience. The practical examination shall be conducted in lab/equipment's/human models till

completion of the second year and Physiotherapy practical's for 3rd and 4th year may be conducted with assessing patients and describing the treatment methods. This shall be implemented based on the availability of patients and feasibility.

- Each practical examination shall be jointly conducted and evaluated by one internal examiner and one external examiner or two external examiners if there are no internal examiners.

5.9.5. PASS CRITERIA

- A candidate is declared to have passed the examination in a subject, if he/she secures a minimum of 35% marks in the university conducts theory examination, 35% in university practical examination and viva-voce examination individually.

- Subject aggregate marks scored by the candidate should be 50% including theory, theory internal assessment & practical internal assessment, university practical and viva-voce added together. Subject aggregate of 50% also applies to the subject which does not have a internal assessment, practical and viva component. This pass criterion applies to core course, AEC, DSE and GE course.

5.9.6. GRACE MARKS:

The grace marks up to a maximum of 05 (Five) marks may be awarded at the discretion of the University to a student who has **failed only in one subject** but has passed all other subjects in the semester.

5.9.7. CBCS SUBJECTS:

The minimum prescribed marks for a pass in a CBCS (AEC/SEC/DES/GE) subject shall be 50% of the maximum marks prescribed for a subject. These subjects examination shall be conducted after core subject's examination.

5.9.8. CARRYOVER POLICY

- In the first year, candidates who fail in first semester examinations may go to the second semesters and take the examinations. The student shall have to pass all the papers in first semester & 2nd semester to enter in second year or 3rd semester.

- The candidates shall carry the 3rd & 4th-semester papers to 5th semester and have to pass all the subjects of 3rd & 4th semester together with a 5th semester to enter in the 6th semester.

- The 6th semester papers can be carried over to 7th semester, but students have to pass all the subjects of 6th & 7th semester to enter the 8th semester (final Semester).

- The candidates who failed to clear the subjects on particular break semester will be placed 6 months back as an intermediate batch.

5.9.9. DECLARATION OF CLASSES

- A candidate having appeared in all the subjects in the university examination and passed the examination in the first attempt and secures 75% of marks or more of the total marks prescribed will be declared to have passed the examination with Distinction.

- A candidate having appeared in all subjects in the university examination and passed the examination in the first attempt and secures 60% of marks or more but less than 75% of the total marks prescribed will be declared to have passed the examination in First Class.

- A candidate having appeared in all the subjects in the university examination and

passed the examination in the first attempt and secures 50% of marks or more but less than 60% of the total marks prescribed will be declared to have passed the examination in Second Class.

- A candidate passing the university examination in more than one attempt shall be placed in a semester Pass class irrespective of the percentage of marks secured by him/her in the examination.

5.9.10. ELIGIBILITY FOR THE AWARD OF DEGREE:

A candidate shall pass in all the subjects of all the semesters of the programme and complete minimum of 6-month compulsory rotatory internship programme to be eligible for the award of Bachelor of Physiotherapy degree.

6. Semesters:

6.1. An academic year consists of two semesters.

	Odd semester	Even semester
UG (BPT)	**August - January**	**February to July**
	1st, 3rd, 5th and 7th semesters	2nd , 4th , 6th and 8th semesters

6.2. The annual working days would be 200 working days (100 days per semester).

7. Credits:

7.1. Credit defines the quantum of contents/syllabus prescribed for a course and determines the number of hours of instruction required per week. Thus, normally in each of the courses, credits will be assigned on the basis of the number of lectures/ tutorial laboratory work and other forms of learning required, to complete the course contents in a 15-20 week schedule:

- 1 credit = 1 hour of lecture per week (1 Credit course = 15 hours of lectures per semester)
- 3 credits = 3 hours of instruction per week (3 Credit course = 45 hours of lectures per semester)

7.2. Credits will be assigned on the basis of the lectures (L) / tutorials (T) / Clinical Training (CR) / laboratory work (P) / Project/Research work (PR)/ Internship (INT) and other forms of learning in a 15-20 week schedule.

- L - **One credit** for **one hour** lecture per week (1 credit course = 15 hours /semester)
- T - **One credit** for **one hour** tutorial per week (1 credit course = 15 hours /semester)
- P/T - **One credit** for every **two hours** of practical or lab (1 credit course = 30 hrs/ sem)
- CR - **One credit** for every **2 hours** of Clinical training/ Clinical rotation/ posting (1 credit course = **30** hours)
- RP - **One credit** for every **two hours** of Research Project per week – Max Credit 20-25 (1 credit course = 30 hours)
- INT - **One credit** for every **2 hours** of compulsory rotatory clinical training (1 credit course = **30** hours)
-

	Hours spend	Credit
Lecture – L	1 Hour	= 1 credit
Tutorial – T	1 Hour	= 1 credit
Practical / lab – P	2 Hour	= 1 credit
Clinical training/posting/field training – CT/CP	2 Hour	= 1 credit
Project / Research work	2 hours	= 1 credit
Internship- compulsory rotatory internship training- INT***	2 hours	= 1 credit
*** **Maximum of 42 credits**		

8. Types of Courses:

Courses in a programme may be of three kinds:

- **Core Course**
- **Elective Course**
- **Ability Enhancement Course (Foundation Courses)**

8.1 Core Course: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course. There may be a **Core Course** in every semester. This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

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

8.2.1 Discipline Specific Elective (DSE) Course: Elective courses offered by the main discipline/subject of study are referred to as Discipline Specific Elective. The University / Institute may also offer discipline related Elective courses of interdisciplinary nature. An elective may be **"Discipline Specific Electives (DSE)"** focusing on those courses which add generic proficiency to the students.

8.2.2 Dissertation / Project: An Elective/Core course designed to acquire special/ advanced knowledge, such as supplement study / support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher / faculty member is called dissertation / project.

8.2.3 Generic Elective (GE) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

P.S.: A core course offered in a discipline / subject may be treated as an elective by other discipline / subject and *vice versa* and such electives may also be referred to as Generic Elective.

8.3 Ability Enhancement Courses (AEC): The Ability Enhancement (AE) Courses may be of two kinds: Ability Enhancement Compulsory Courses (AECC) and Skill Enhancement Courses (SEC).

8.3.1. Ability Enhancement Compulsory Courses (AECC): These are the courses based upon the content that leads to Knowledge enhancement (i) Environmental Science and (ii) English/MIL Communication. These are mandatory for all disciplines.

8.3.2. Skill Enhancement Courses (SEC): SEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, Indian and foreign languages etc. These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.

9. Assigning Credit Hours per Course: While there is flexibility for the departments in allocation of credits to various courses offered based on the curriculum for specific course per program.

The general formula would be:

- All core course should be restricted to a maximum of 4 credits
- All electives should be restricted to a maximum of 3 credits

- All ability enhancement course should be restricted to a maximum of 2 credits

The concerned BOS will choose the convenient credit pattern for every course based on the requirement. The credit can be allotted based on the requirement for professional/ health science courses.

Credit for Courses with Theory and Lab components

Model – 1							
First year – Semester - 1							
Course Number	Course Code	Course Title	L	T	P	C	Total Hours
1	BPT 111	Anatomy	4	-	4	6 (4+2)	120

9.1. Assigning total Credits for a Program: 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 SRU the UG programs are for 3 years duration offering a curriculum for 150 credits total. In health care and allied health programs can have credit points based on the curriculum requirement.

9.2. Credit Value per Course & Structure of Syllabus:

To ensure uniformity in assigning the credits to a course, a structured and unitized syllabus shall be observed. The each course will be provided a structured syllabus in the following format:

a) Title of the Course
b) Learning Objectives
c) Units of course

d) Syllabus Content
e) Learning Outcomes
f) References

I. Text Books – 2
II. Reference Books – 2
III. Web Resources – 2 Web Portals

Minimum credit allocation for a course is as per the curriculum designed by the department.

10. Code Numbering of the Course component:

The courses listed will be denoted with components of (L-T-P-C) where L, T, P, C refer to the Credits assigned to **L**ecture, **T**utorial, **P**ractical / Laboratory and Total **C**redit under each of the courses. **P**-column can also include Clinical Training (CR), field training and Research Project (RP/PR) wherever appropriate. In addition to learning the subject of choice and peripheral subject of use, emphasis shall also be placed on improving communication, language and computer skills of the student.

10.1. Course Numbering pattern:

The course code explains the department where the course is offered and the year and semester in which it is offered. Each course can be numbered in an order or sequence.

11. Examinations and Assessment

Since various methods for examination and assessment for the courses and programmes of the Universities as approved by their respective statutory bodies are followed, there is great extent of variation in interpreting the knowledge and skills of the students across the universities. In assessing the performance of the students in examinations, the usual approach is to award marks based on the examinations conducted at various stages (sessional, mid-term, end-semester etc.,) in a semester. Some of the HEIs (Higher education institutions) convert these marks to letter grades based on absolute or relative grading system and award the grades. Again, there is a marked variation across the colleges and universities in the number/type of grades, grade points, letter grades used, which creates difficulties in comparing students across the institutions. Hence, SDUAHER – BPT department has adopted the UGC recommended system of awarding the grades and CGPA under this Choice Based Credit Semester system.

12. Letter Grades and Grade Points:

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

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

Table 1: conversion of Grades and Grade Points

Letter Grade	Grade Point
O (Outstanding)	10
A+ (Excellent)	9
A (Very Good)	8
B (Good)	7
P (pass)	6
F (Fail)/ RA (Reappear)	0
Ab (Absent)	0
Not Completed (NC)	0
RC- Repeat the course	0

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

iv. Candidate with NC grading indicates detained from examination may be due to lack of fulfilment of internal marks in the course; while RC indicates that student is not fulfilling the minimum criteria for academic progress and lack of attendance. If the course is a core course, the candidate should repeat the course when it is offered the next time.

12.1. CBCS Grading System - Marks equivalence table

Semester % of marks	Grade point	SGPA/ CGPA	Letter Grade	Result/ Class Description
90.0-100	10	9.00-10.00	O (Outstanding)	Outstanding
80.0-<90.0	9	8.00-<8.99	A+ (Excellent)	First Class Exemplary
75.0-<80.0	8	7.00-< 7.99	A (Very Good)	First Class Distinction
60.0-<75.0	7	6.00-< 6.99	B (Good)	First Class
50.0-<60.0	6	5.0-< 5.99	P (PASS)	Second Class
<50.0	0	<5.0	F (Fail)	Fail/ Reappear
Absent	0	0	Ab (Absent)	-

12.3. RANKING

The first two ranks to every UG/PG programme will be decided on the basis of grades of CGPA in the courses. In case of a tie, marks % [of core and DE courses only] will be taken into account.

12.4. Classification of successful candidates

The results of successful candidates at the end of each semester shall be declared on the basis of percentage of aggregate marks, converted to grade point and alpha-sign grade for each course on the basis of 10 point scale recommended by UGC. Overall Performance in a Program and Ranking of a candidate is in accordance with the University regulations. The following table the final results with grade description and grades

Cumulative Grades and Grade Point Average

Consolidated Grade Card		
Letter grade	Classification	CGPA RANGE
O	Outstanding	9.00-10.00
A+	First Class Exemplary	8.00 - 8.99
A	First Class Distinction	7.00 - 7.99
B	First Class	6.00 - 6.99
P	Second Class	5.0 – 5.99

12.5. A successful candidate

(i) Who secures not less than O grade with a CGPA of 9.0 – 10.0 shall be declared to have secured „**OUTSTANDING**" provided he/she passes the whole examination in the FIRST ATTEMPT;

(ii) Who secures not less than A+ grade with a CGPA of 8.01 – 8.99 shall be declared to have secured **First Class Exemplary** provided he/she passes the whole examination in the FIRST ATTEMPT;

(iii) Who secures not less than A grade with a CGPA of 7.01 – 7.99 and completes the course within the stipulated course period shall be declared to have passed the examinations with "**First Class Distinction**"

(iv) Who secures not less than B grade with a CGPA of 6.01 – 6.99 and completes the course within the stipulated course period shall be declared to have passed the

examinations with "**First Class**"

(V) All other candidates (with grade P and above) shall be declared to have passed the examinations with "**second class".**

13. Computations of SGPA and CGPA

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone & earned by a student, i.e.,

SGPA (Si) = ∑(Ci x Gi) / ∑Ci

where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

ii. The CGPA is also calculated in the same manner taking into account all the courses undergone & earned by a student over all the semesters of a programme, i.e.

CGPA = ∑(Ci x Si) / ∑ Ci

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

iii. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

13.1. Illustration of Computation of SGPA and CGPA and Format for Transcripts

13.1.1. Computation of SGPA

Course	Credit	Grade Letter	Grade Point	Credit Point (Credit x Grade)
Course 1	3	A	8	3 X 8 = 24

Course 2	4	B+	7	4 X 7 = 28
Course 3	3	B	6	3 X 6 = 18
Course 4	3	0	10	3 X 10 = 30
Course 5	3	C	5	3 X 5 = 15
Course 6	4	B	6	4 X 6 = 24
	20			139

Illustration for SGPA

Thus, SGPA = 139/20 = 6.95

13.1.2. Computation of CGPA

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Credit : 20	Credit : 22	Credit : 25	Credit : 26	Credit : 26	Credit : 25
SGPA : 6.9	SGPA : 6.8	SGPA : 6.6	SGPA : 6.0	SGPA : 6.3	SGPA : 8.0

Illustration for CGPA

Thus,

$$\text{CGPA} = \frac{20 \times 6.9 + 22 \times 6.8 + 25 \times 6.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0}{144} = 6.75 \text{ or “B”}$$

ii. Transcript (Format): Based on the above recommendations on Letter grades, grade points and SGPA and CGPA, the university may issue the transcript for each semester and a consolidated transcript indicating the performance in all semesters.

14. MINIMUM CRITERIA FOR A PASS

A candidate shall be declared to have passed the UG and PG if he/she secures at least a CGPA of 5.0 (Course Alpha-Sign Grade P, equal or more than 50% of marks) in the aggregate of both internal assessment and semester end examination marks put together in each unit such as theory papers/ practicals/ project work/ dissertation/ viva-voice, etc

15. POWER TO REMOVE DIFFICULTIES

I. If any difficulty arises in giving effect to the provisions of these regulations, the Vice Chancellor may by order make such provisions not inconsistent with the Act, Students, Ordinance or other regulations as appears to be necessary or expedient to remove the difficulty.

II. Every order made under this rule shall be subjected to ratification by the appropriate university authorities.

16. List of courses

16.1. LIST OF CORE COURSES

12.1. LIST OF CORE COURSES OFFERED BY SDUAHER FOR BPT PROGRAM			
Sl no	Program Year	Odd Semester	Even Semester
1.	First year	**1st semester – core subjects**	**2nd semester – core subjects**
		1. Anatomy 2. Physiology	1. Biomechanics 2. Biochemistry 3. Psychology & sociology
2.	Second year	**3rd semester – core subjects**	**4th semester – core subjects**
		1. Exercise therapy 2. Microbiology and pathology 3. Research methodology and Bio- statistics	1. Electrotherapy 2. Pharmacology 3. General medicine & ardio-respiratory conditions 4. General surgery & cardio thoracic conditions
3.	Third year	**5th semester – core subjects**	**6th semester – core subjects**
		1. Physiotherapy in cardio respiratory conditions & general conditions 2. Clinical orthopaedics, traumatology & Rheumatology 3. Exercise physiology, health & fitness	1. Physiotherapy in musculo-skeletal conditions and rheumatology 2. Physiotherapy in sports and advanced mobilizations 3. Acupuncture and dry needling 4. Women's health and pediatrics
4.	Fourth year	**7th semester – core subjects**	**8th semester – core subjects**
		1. Physiotherapy in neurological conditions 2. Clinical neurology & Neuro surgery 3. Physiotherapy in Women's health & Pediatrics	1. Community & Geriatric Physiotherapy 2. Community Medicine 3. Prosthetics & Orthotics

5.	**5th year**	**6 month compulsory Rotatory Internship**

16.2. ABILITY ENHANCEMENT COURSES

12.2. LIST OF ABILITY ENHANCEMENT COURSE OFFERED BY SDUAHER FOR BPT PROGRAM (compulsory)			
Semester	Course code	Title	Credits max
1	BPT 113	English Basics	2
2	BPT 124	English and Communication Skills	2
3	BPT 214	Environmental Sciences	2

16.3. SKILL ENHANCEMENT COURSES

12.3. LIST OF SKILL ENHANCEMENT COURSE OFFERED BY SDUAHER FOR BPT PROGRAM			
Semester	Course code	Title	Credits max
4	BPT 225	Basics in Computer applications	2
5	BPT 314	Diagnostic imaging for physiotherapist	2
6	BPT 325	Ergonomics	2
7	BPT 414	Swallowing therapy	2
8	BPT 424	Electro physiology and Diagnosis	2

16.4. DISCIPLINE SPECIFIC ELECTIVE COURSES AND GENERIC ELECTIVE COURSES

12.4. LIST OF DISCIPLINE SPECIFIC ELECTIVE (DSE) AND GENERIC ELECTIVE (GE) COURSE OFFERED FOR BPT PROGRAM			
Semester	Course code	Title	Credits Min – max
1	BPT 114	Introduction to Physiotherapy and rehabilitation	2 – 3
	BPT 115	Introduction to health care system	
	BPT 116	Kannada	
2	BPT 125	First aid, CPR and BLS	2 – 3
	BPT 126	Counselling and guidance	
	BPT 127	Fundamentals of occupational health	
3	BPT 215	Yoga and its therapeutic applications	2 - 3
	BPT 216	Personality development and stress management	
	BPT 217	Team building and leadership	
4	BPT 226	Medical physics and electronics	2 - 3
	BPT 227	Public health and hygiene	
	BPT 228	Infection prevention and control.	
5	BPT 315	Life style disorders	2 - 3
	BPT 316	Hospital management	
	BPT317	NGO management	
6	BPT 326	Acupuncture and dry needling	2 - 3
	BPT 327	Malnutrition and public health	
	BPT 328	Health psychology	
7	BPT 415	Evidence based practice and clinical reasoning	2 - 3
	BPT 416	Occupational Nutrition	
	BPT 417	Health Behaviour	
8	BPT 425	Occupational therapy and speech therapy	2 - 3
	BPT 426	Hospital Operations Management	
	BPT 427	Interpersonal Skills	

17. Distribution of credits and course hours

17.1. 1st year – 1st semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
BPT 111	Anatomy	240	120	120	8	8	8	4	12
BPT 112	Physiology	210	150	60	10	4	10	2	12

(Ability Enhancement/ Skill Enhancement – Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
BPT 113	English basics	30	30	0	2	0	2	0	2

Discipline Based Elective Subject (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
BPT 114	Introduction to Physiotherapy and rehabilitation	30	30	0	2	0	2	0	2
BPT 115	Introduction to health care system	30	30	0	2	0	2	0	
BPT 116	Kannada	30	30	0	2	0	2	0	
	Total hours / credit								30

17.2. 1st year – 2nd semester

Course No	Course title		Hours per semester			Hours/week		Credits		Total credits
			Total	L	P	L	P	L	P	
Core subjects										
BPT 121	Biomechanics		240	150	90	10	6	10	3	13
BPT 122	Biochemistry		75	60	15	4	1	4	0.5	4.5
BPT 123	Psychology & sociology	A	45	45	0	3	0	3	0	6 (3+3)
		B	45	45	0	3	0	3	0	

(Ability Enhancement/ Skill Enhancement – Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
BPT 124	English and communication skills	30	30	0	2	0	2	0	2

Discipline Based Elective Subject (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
BPT 125	First aid, BLS and CPR	45	30	15	2	1	2	0.5	2.5/ 2
BPT 126	Counseling and guidance	30	30	0	2	0	2	0	
BPT 127	Fundamentals of occupational health	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical posting / Training / community visit/ field work	60	0	60	0	4	0	2	2
	Integrated seminar / Assignment	30	30	0	2	0	0	0	0
	Total hours / credit								30

17.3. 2nd Year - 3rd Semester

Course No	Course title		Hours per semester			Hours/week		Credits		Total credits
			Total	L	P	L	P	L	P	
Core subjects										
BPT 211	Exercise therapy		240	105	135	7	9	7	4.5	11.5
BPT 212	Pathology & Microbiology	A	60	60	0	4	0	4	0	8 (4+4)
		B	60	60	0	4	0	4	0	
BPT 213	Research methodology and Biostatistics	A	23	23	0	1.5	0	1.5	0	3
		B	22	23	0	1.5	0	1.5	0	

(Ability Enhancement/ Skill Enhancement – Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
BPT 214	Environmental studies	30	30	0	2	0	2	0	2

Discipline Based Elective Subject (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
BPT 215	Yoga and its therapeutic applications	45	15	30	1	2	1	1	2
BPT 216	Personality development and stress management	30	30	0	30	0	2	0	
BPT 217	Team building and leadership	30	30	0	30	0	2	0	
Clinical / Others									
	Clinical Education/ training / field work	135	0	135	0	9	0	4.5	4.5

	Integrated seminar / assignment	15	15	0	1	0	0	0	0
	Total hours / credit	630	.	.	.	.			31

17.4. 2nd year - 4th Semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
BPT 221	Electro therapy	240	90	150	6	10	6	5	9
BPT 222	Pharmacology	45	45	0	3	0	3	0	3
BPT 223	General medicine and cardio respiratory conditions	60	60	0	4	0	4	0	4
BPT 224	General surgery and cardio thoracic conditions	75	75	0	5	0	5	0	5

(Ability Enhancement/ Skill Enhancement – Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
BPT 225	Basics in computer applications	45	30	15	2	1	2	0.5	2

Discipline Based Elective Subject (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max)
		Total	L	P	L	P	L	P	
BPT 226	Medical physics and electronics	30	15	15	1	1	1	0.5	2
BPT 227	Public health and hygiene	30	30	0	2	0	2	0	
BPT 228	Infection prevention and control	45	30	15	2	1	2	0.5	
Clinical / Others									
	Clinical Education / Training	135	0	135	0	9	0	4.5	4.5
	Total hours / credit	630							29.5

17.5. 3rd year - 5th Semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
BPT 311	Physiotherapy in cardio respiratory and general conditions	150	90	60	6	4	6	2	8
BPT 312	Clinical orthopaedics, trauma tology & Rheumatology	60	60	0	4	0	4	0	4
BPT 313	Exercise physiology, health & fitness	45	30	15	2	1	2	0.5	2.5

(**Ability Enhancement/ Skill Enhancement – Compulsory**)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
BPT 314	Diagnostic imaging for Physiotherapist	30	25	5	1.5	1	1.5	0.5	2

Discipline Based Elective Subject (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
BPT 315	Life style disorders	30	30	0	2	0	2	0	2
BPT 316	Hospital management	30	30	0	2	0	2	0	
BPT 317	NGO management	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical Education / Training	270	0	270	0	18	0	9	9
	Project	30	30	0	2	0	2	0	1
	Total hours / credit	675							28.5

17.6. 3rd year - 6th Semester

Course No	Course title		Hours per semester			Hours/week		Credits		Total credits
			Total	L	P	L	P	L	P	
Core subjects										
BPT 321	Physiotherapy in musculo- skeletal conditions and rheumatology		150	75	75	5	5	5	2.5	7.5
BPT 322	Physiotherapy in sports and advanced mobilizations		60	30	30	2	2	2	1	3
BPT 323	Women's health and pediatrics	A	30	30	0	2	0	2	0	4
		B	30	30	0	2	0	2	0	
BPT 324	Medical law, ethics and administration		30	30	0	2	0	2	0	2

(**Ability Enhancement/ Skill Enhancement – Compulsory**)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
BPT 325	Ergonomics	30	25	5	1.5	1	1.5	0.5	2

Discipline Based Elective Subject (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
BPT 326	Acupuncture and dry needling	45	20	25	1.5	1.5	1.5	1	2 / 2.5
BPT 327	Malnutrition and public health	30	30	0	2	0	2	0	
BPT 328	Health psychology	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical Education / Training	270	0	270	0	18	0	9	9

	Project	30	30	0	2	0	2	0	1
	Total hours / credit	675							31

17.7. 4th year - 7th Semester

Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
Core subjects									
BPT 411	Clinical neurology & Neuro surgery	60	60	0	4	0	4	0	4
BPT 412	Physiotherapy in neurological conditions	150	75	75	5	5	5	2.5	7.5
BPT 413	Physiotherapy in Women's health & Pediatrics	60	30	30	2	2	2	1	3

(Ability Enhancement/ Skill Enhancement – Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
BPT 414	Swallowing therapy	30	15	15	1	1	1	0.5	2

Discipline Based Elective Subject (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
BPT 415	Evidence based practice and clinical reasoning	30	30	0	2	0	2	0	2
BPT 416	Occupational Nutrition	30	30	0	2	0	2	0	
BPT 417	Health Behaviour	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical Posting / Training	270	0	270	0	18	0	9	9
	Project	30	30	0	2	0	2	0	1
	Total hours / credit	630							28.5

17.8. 4th year - 8th Semester

Core subjects									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits
		Total	L	P	L	P	L	P	
BPT 421	Community Medicine	60	60	0	4	0	4	0	4
BPT 422	Community & Geriatric Physiotherapy	150	90	60	6	4	6	2	8
BPT 413	Prosthetics & Orthotics	30	15	15	1	1	1	0.5	1.5

(Ability Enhancement/ Skill Enhancement – Compulsory)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
BPT 424	Electro physiology and Diagnosis	30	23	7	1.5	1	1.5	0.5	2

Discipline Based Elective Subject (Minimum one)									
Course No	Course title	Hours per semester			Hours/week		Credits		Total credits (Max
		Total	L	P	L	P	L	P	
BPT 425	Occupational therapy and speech therapy	45	23	22	1.5	1.5	1.5	1	2
BPT 426	Hospital Operations Management	30	30	0	2	0	2	0	
BPT 427	Interpersonal Skills	30	30	0	2	0	2	0	
Clinical / Others									
	Clinical Education / Training	270	0	270	0	18	0	9	9
	Project	30	30	0	2	0	2	0	1
	Total hours / credit	615							27.5

18. Supervised Compulsory Rotatory Internship (6 month/180 days)

18.1. Details of clinical department training during internship

Sl. No	Department	No of days	Credits
1.	Orthopaedic Physiotherapy	**30 Days**	**Total credit for internship = 42 ***
2.	Sports Physiotherapy	**15 days**	
3.	Neurological Physiotherapy	**30 days**	
4.	Paediatric Physiotherapy	**15 days**	
5.	Cardio Respiratory & ICU Physiotherapy	**30 days**	
6.	Community PT & Geriatric Care	**15 days**	
7.	Women's Health Physiotherapy	**15 days**	
8.	Oncology Physiotherapy	**15 days**	
9.	Physiotherapy - OPD	**15 days**	
	Total	**180 days**	
*** maximum credit for internship is not exceeding 42***			

18.2. Details of credits for Compulsory Rotatory Internship.

Compulsory Rotatory Clinical Internship		
Total days	**Hours per day**	**Total hours of practice**
180 days (6 months)	**7**	**1260**
Details of Credits for internship		
		Total credits
15 course hours = 1 credit		**42 credits**
For internship 30 course hours = 1 credit		
Total hours = 1260		
Internship credit = (1260 hours / 30 hours) = 42 credits		

19. Distribution of Marks in Theory & Practical

19.1. Semester- I

SUBJECT WISE DISTRIBUTION OF MARKS								
		Core subjects	Internal assessment		University examination			Grand total
SL No	Paper	Subject	T	P	T	V	P	
1.	Paper-I	Anatomy	20	20	100	30	30	**200**
2.	Paper-II	Physiology	20	20	100	30	30	**200**
Ability Enhancement - AEC (compulsory)								
3.	Paper-III	English Basics	--	--	50	--	--	**50**
Discipline Based Elective Subject (DEC)/ Generic Elective (GE) (Minimum One)								
4.	Paper-IV	Introduction To Physiotherapy and Rehabilitation	--	--	50	--	--	**50**
5.	Paper-V	Introduction To Health Care System	--	--	50	--	--	**50**
6.	Paper-VI	Kannada	--	--	50	--	--	**50**
***T= Theory *P = Practical *V = Viva-voce**								

19.2. Semester- II

SUBJECT WISE DISTRIBUTION OF MARKS								
		Core subjects	Internal assessment		University examination			Grand total
SL No	**Paper**	**Subject**	**T**	**P**	**T**	**V**	**P**	
1.	Paper-I	Biomechanics	20	20	100	30	30	**200**
2.	Paper-II	Biochemistry	20	--	80	--	--	**100**
3.	Paper-III	Psychology and sociology	10	--	40	--	--	50
4.			10	--	40	--	--	50
Ability Enhancement - AEC (compulsory)								
5.	Paper-IV	English and communication skills	--	--	50	--	--	**50**
Discipline Based Elective Subject (DEC)/ Generic Elective (GE) (Minimum One)								
6.	Paper-V	First aid, BLS and CPR	--	--	50	--	--	**50**
7.	Paper-VI	Counseling and guidance	--	--	50	--	--	**50**
8.	Paper-VII	Fundamentals of occupational health	--	--	50	--	--	**50**
***T= Theory *P = Practical *V = Viva-voce**								

19.3. Semester- III

SUBJECT WISE DISTRIBUTION OF MARKS								
		Core subjects	Internal assessment		University examination			Grand total
SL No	**Paper**	**Subject**	**T**	**P**	**T**	**V**	**P**	
1.	Paper-I	Exercise therapy	20	20	100	30	30	**200**
2.	Paper-II	**Pathology and microbiology**	10	--	40	--	--	50
			10	--	40	--	--	50
3.	Paper-III	**Research methodology and biostatistics**	10	--	40	--	--	50
			10	--	40	--	--	50
Ability Enhancement - AEC (compulsory)								
4.	Paper-IV	**Environmental studies**	--	--	50	--	--	**50**
Discipline Based Elective Subject (DEC)/ Generic Elective (GE) (Minimum One)								
5.	Paper-V	**Yoga and its therapeutic applications**	10	10	40	10	10	80
6.	Paper-VI	**Personality development and stress management**	--	--	50	--	--	**50**
7.	Paper-VII	**Team building and leadership**	--	--	50	--	--	**50**
***T= Theory *P = Practical *V = Viva-voce**								

19.4. Semester- IV

SUBJECT WISE DISTRIBUTION OF MARKS								
		Core subjects	Internal assessment		University examination			Grand total
SL No	**Paper**	**Subject**	**T**	**P**	**T**	**V**	**P**	
1.	Paper-I	Electro therapy	20	20	100	30	30	**200**
2.	Paper-II	Pharmacology	10	--	40	--	--	50
3.	Paper- III	General medicine and cardio respiratory conditions	20	--	80	--	--	100
4.	Paper- IV	General surgery and cardio thoracic conditions	20	--	80	--	--	100
Ability Enhancement - AEC (compulsory)								
5.	Paper-IV	Basics in computer applications	--	--	50	--	--	**50**
Discipline Based Elective Subject (DEC)/ Generic Elective (GE) (Minimum One)								
6.	Paper-V	Medical physics and electronics	--	--	50	--	--	**50**
7.	Paper-VI	Public health and hygiene	--	--	50	--	--	**50**
8.	Paper-VII	Infection prevention and control	--	--	50	--	--	**50**
***T= Theory *P = Practical *V = Viva-voce**								

19.5. Semester- V

SUBJECT WISE DISTRIBUTION OF MARKS								
		Core subjects	Internal assessment		University examination			Grand total
SL No	**Paper**	**Subject**	**T**	**P**	**T**	**V**	**P**	
1.	Paper-I	Physiotherapy incardio respiratory and general conditions	20	20	100	30	30	**200**
2.	Paper-II	Clinical orthopaedics, trauma tology & Rheumatology	20	--	80	--	--	100
3.	Paper-III	Exercise physiology, health & fitness	10	--	40	--	--	50
Ability Enhancement - AEC (compulsory)								
4.	Paper-IV	Diagnostic imagingfor Physiotherapist	--	--	50	--	--	**50**
Discipline Based Elective Subject (DEC)/ Generic Elective (GE) (Minimum One)								
5.	Paper-V	Life style disorders	--	--	50	--	--	**50**
6.	Paper-VI	Hospital management	--	--	50	--	--	**50**
7.	Paper-VII	NGO management	--	--	50	--	--	**50**
***T= Theory *P = Practical *V = Viva-voce**								

19.6. Semester- VI

SUBJECT WISE DISTRIBUTION OF MARKS								
		Core subjects	Internal assessment		University examination			Grand total
SL No	**Paper**	**Subject**	**T**	**P**	**T**	**V**	**P**	
1.	Paper-I	Physiotherapy in musculo- skeletal conditions and rheumatology	20	20	100	30	30	**200**
2.	Paper-II	Physiotherapy in sports and advanced mobilizations	10	--	40	--	--	50
3.	Paper-III	Women's health and pediatrics	10	--	40	--	--	50
			10	--	40	--	--	50
4.	Paper-IV	Medical law, ethics and administration	10	--	40	--	--	50
Ability Enhancement - AEC (compulsory)								
5.	Paper-V	Ergonomics	--	--	50	--	--	**50**
Discipline Based Elective Subject (DEC)/ Generic Elective (GE) (Minimum One)								
6.	Paper-VI	Acupuncture and dry needling	10	10	40	10	10	**80**
7.	Paper-VII	Malnutrition and public health	--	--	50	--	--	**50**
8.	Paper-VIII	Health psychology	--	--	50	--	--	**50**
***T= Theory *P = Practical *V = Viva-voce**								

19.7. Semester- VII

SUBJECT WISE DISTRIBUTION OF MARKS								
		Core subjects	Internal assessment		University examination			Grand total
SL No	**Paper**	**Subject**	**T**	**P**	**T**	**V**	**P**	
1.	Paper-I	Physiotherapy in neurological conditions	20	20	100	30	30	**200**
2.	Paper-II	Clinical neurology & Neuro surgery	20	--	80	--	--	**80**
3.	Paper-III	Physiotherapy in Women's health & Pediatrics	10	10	50	15	15	**100**
			10	10	50	15	15	**100**
Ability Enhancement - AEC (compulsory)								
4.	Paper-IV	Swallowing therapy	--	--	50	--	--	**50**
Discipline Based Elective Subject (DEC)/ Generic Elective (GE) (Minimum One)								
5.	Paper-V	Evidence based practice and clinical reasoning	--	--	50	--	--	**50**
6.	Paper-VI	Occupational Nutrition	--	--	50	--	--	**50**
7.	Paper-VII	Health Behaviour	--	--	50	--	--	**50**
***T= Theory *P = Practical *V = Viva-voce**								

19.8. Semester- VIII

SUBJECT WISE DISTRIBUTION OF MARKS								
		Core subjects	Internal assessment		University examination			Grand total
SL No	**Paper**	**Subject**	**T**	**P**	**T**	**V**	**P**	
1.	Paper-I	Community & Geriatric Physiotherapy	20	20	100	30	30	**200**
2.	Paper-II	Community Medicine	20	--	80	--	--	**80**
3.	Paper-III	Prosthetics & Orthotics	10	10	40	10	10	**80**
Ability Enhancement - AEC (compulsory)								
4.	Paper-IV	Electro physiology and Diagnosis	--	--	50	--	--	**50**
Discipline Based Elective Subject (DEC)/ Generic Elective (GE) (Minimum One)								
5.	Paper-V	Occupational therapy and speech therapy	10	10	50	15	15	**100**
6.	Paper-VI	Hospital Operations Management	--	--	50	--	--	**50**
7.	Paper-VII	Interpersonal Skills	--	--	50	--	--	**50**
8.	Paper-VIII	**Project**	--	--	--	20	30	**50**
***T= Theory *P = Practical *V = Viva-voce**								

20.TOTAL MARKS FOR THEORY PAPERS, PATTERN, AND NUMBER OF QUESTIONS.

20.1.SUBJECTS HAVING MAXIMUM MARKS = 100

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION	TOTAL
Essay type	3 (answer any two)	10	20
Short essay type	12 (answer any ten)	5	50
Short answer type	12(answer any ten)	3	30
			100

20.2. SUBJECTS HAVING MAXIMUM MARKS = 80

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION	TOTAL
Essay type	3 (answer any 2)	10	20
Short essay type	8 (Answer any 6)	5	30
Short answer type	12 (answer any ten)	3	30
			80

20.3.SUBJECTS HAVING MAXIMUM MARKS = 50

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION	TOTAL
Essay type	2 (Answer any 1)	10	10
Short essay type	7 (answer any 5)	5	25
Short answer type	6 (answer any 5)	3	15
			50

20.4.SUBJECTS HAVING MAXIMUM MARKS = 40

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION	TOTAL
Essay type	1 (Answer all)	10	10
Short essay type	4 (answer any 3)	5	15
Short answer type	6 (answer any 5)	3	15
			40

21. Distribution of Marks for various courses

21.1. Total Marks For Theory Paper Has 100 Marks with Practical

Sl. No	Theory mark	Internal marks		University examination		Grand total
		Theory	Practical	Practical	Viva – Voce	
1.	100	20	20	30	30	**200**

21.2. Total marks for theory paper which has 80 marks without Practical

Sl No	Theory mark	Internal marks Theory	Grand total
1.	80	20	**100**

21.3. Total marks for theory paper which has only theory of 50 marks

Sl No	Theory mark	Internal marks Theory	Grand total
1.	50	Nil	**50**

21.4. Total marks for theory paper which has 50 marks with Practical

Sl. No	Theory mark	Internal marks		University examination		Grand total
		Theory	Practical	Practical	Viva – Voce	
1.	50	10	10	15	15	**100**

21.5. Total marks for theory paper which has 40 marks without Practical

Sl No	Theory mark	Internal marks Theory	Grand total
1.	40	10	**50**

21.6. Total marks for theory paper which has 40 marks with Practical for specialty paper

Sl. No	Theory mark	Internal marks		University examination		Grand total
		Theory	Practical	Practical	Viva – Voce	
1.	40	10	10	10	10	**80**

ANATOMY

Course Objectives:

At the end of the course, the student shall be able to acquire requisite comprehensive knowledge and skills in the subject of anatomy which shall include functional anatomy of various structures in the human body. Candidate shall also able to identify microscopic structures and correlate their functional and clinical aspects as well as intramuscular, intravenous and arterial interventions.

Subject Title	: ANATOMY
Duration	: 0- 6 Months
Total Hours	: 240 Hours
Theory	: 120 Hours
Practical	: 120 Hours
Total Hours / Week	: 16 Hours
Method of Assessment	: Written, Oral, Practical

1. Histology

General Histology, study of the basic tissues of the body;
Microscope, Cell, Epithelium, Connective Tissue, Cartilage, Bone, Muscular tissue, Nerve Tissue – TS & LS, Circulatory system – large sized artery, medium sized artery, large sized vein, lymphoid tissue, Skin and its appendages.

2. Embryology

a) Ovum, Spermatozoa, fertilization and formation of the Germ layers and their derivations.
b) Development of skin, Fascia, blood vessels, lymphatic,
c) Development of bones, axial and appendicular skeleton and muscles,
d) Neural tube, brain vessels and spinal cord,
e) Development of brain and brain stem structures

3. Regional Anatomy

Thorax:

A) Cardio – Vascular System

Mediastinum: Divisions and contents

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.

B) Respiratory system

Outline of respiratory passages
Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on broncho-pulmonary segments

Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm.
Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.

C) Abdomen:

Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.
Large blood vessels of the gut
Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver spleen, pancreas, kidney, urinary bladder, intestines, gall bladder.

a) Pelvis:

Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system.

b) Endocrine glands:

Position, shape, size, function, blood supply and nerve supply of the following glands : Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes, pineal glands, thymus.

4. Musculo Skeletal Anatomy -(All the topics to be taught in detail)

a) Anatomical positions of body, axes, planes, common anatomical terminologies (Groove, tuberosity, trochanters etc)
b) Connective tissue classification.
c) Bones- Composition & functions, classification and types according to morphology and development.
d) Joints-definition-classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints.
e) Muscles – origin, insertion, nerve supply and actions

f) Upper Extremity :
   a. Osteology : Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.
   b. Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of fore arm, back of fore arm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.
   c. Joints : Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand.
   d. Arches of hand, skin of the palm and dorsum of hand.

g) Lower Extremity

a. Osteology : Hip bone, femur, tibia, fibula, patella, tarsals, metartarsals and phalanges.
b. Soft parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.
c. Joints: Hip Joint, Knee joint, Ankle joint, joints of the foot.

h) Trunk & Pelvis:

a. Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs
b. Soft tissue: Pre and Para vertebral muscles, intercostals muscles, anterior abdominal wall muscles, Inter-vertebral disc.

i Pelvic girdle and muscles of the pelvic floor i Head and Neck:

Osteology : Mandible and bones of the skull.
Soft parts : Muscles of the face and neck and their nerve and blood supply- extra ocular muscles, triangles of the neck,
Gross anatomy of eyeball, nose, ears and tongue.

iii. Neuro Anatomy

Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system
Cranial nerves

Peripheral nervous system
Peripheral nerve , Neuromuscular junction , Sensory end organs

Central Nervous System
Spinal segments and areas ,
Brain Stem ,

Cerebellum
Inferior colliculi , Superior
Colliculi Thalamus ,
Hypothalamus
Corpus striatum , Cerebral hemisphere, Lateral ventricles Blood supply to brain
Basal Ganglia , Pons, medulla,
The pyramidal system ,extra pyramidal systems
Anatomical integration

PRACTICAL

List of Practical /

Demonstrations * Topics

1. Upper extremity including surface Anatomy[20Hrs]
2. Lower extremity including surface Anatomy[20Hrs]
3. Head & Spinal cord and Neck and Brain including surface Anatomy[20Hrs]
4. Thorax including surface anatomy, abdominal muscles joints[10Hrs]
5. Histology-Elementary tissue including surface Anatomy[10Hrs]
6. Embryology-models, charts & X-rays[10Hrs)

Demonstration of the muscles of the whole body and organs in thorax and abdomen in a cadaver Demonstration of movements in important joints.
Surface making of the lung, pleura, fissures and lobes of lungs, heart, liver, spleen, Kidney, cranial nerves, spinal nerves and important blood vessels.
Identification of body prominences on inspection and by palpation especially of extremities. Points of palpation of nerves and arteries.

Recommended Text books

1. SNELL [Richard S], Clinical Anatomy for Medical students : Ed. 5. Little Brown and Company Boston. 1995, p898,
2. B.D Chaurasia's Human Anatomy – Regional And Applied; Volume I, II and III.
3. Moorie Clinically Oriented Anatomy. Edn.3., Williams and Wilkins, Baltimore,1992, p917,
4. DATTA A.K, Essentials of human Anatomy: Thorax and Abdomen Ed 2. Vol. I Current Book International, Culcutta 1994, p433,
5. DATTA A.K, Essentials of human Anatomy: Head and Neck Ed 2. Vol. II, Current Book International, Culcutta 1995, p363,
5. SINGH, Text book of Anatomy with colour atlas: Introduction, Osteology, Upper Extremity, Lower Extremity. Vol I. P Brothers, New Delhi 1996,
6. SINGH , Text book of Anatomy with colour Atlas: Thorax and Abdomen. Vol II. JP Brothers, New Delhi 1996,

7. SINGH, Text book of Anatomy with colour Atlas: Head and Neck Central Nervous System. Vol III. JP Brothers, New Delhi 1996,
8. ROMANES G J, Cunningham manual of practical anatomy: upper and lower limb edn 15 Vol 1 Oxford Medical Publication, Oxford 1996, P263,
9. ROMANES G J, Cunningham manual of practical anatomy: Thorax and abdomen ed 15 Vol II Oxford Medical Publication, Oxford 1996, P298,
10. ROMANES G J, Cunningham manual of practical anatomy: Head and Neck and Brain ed 15 Vol II Oxford Medical Publication, Oxford 1996, P346,

PHYSIOLOGY

Course Objectives:

At the end of the course, the student shall be able to acquire comprehensive knowledge

of normal function of various organ systems of human body and their inter relationship in respect of total body functions. The candidate shall also be able to perform physiological experiments relevant to normal functioning of the body.

Subject Title	: PHYSIOLOGY
Duration	: 0 - 6 Months
Total Hours	: 210 Hours
Theory	:150
Practical	: 60 Hours
Total Hours / Week	: 14 Hours
Method of Assessment	: Written, Oral, Practical

THEORY

General Physiology [2 Hours]

Cell: Morphology. Organelles: their structure and functions Transport Mechanisms across the cell membrane

Body fluids: Distribution, composition. Tissue fluid – formation.

Blood [10 Hours]

Introduction: Composition and functions of blood.

Plasma: Composition, formation, functions. Plasma proteins.

RBC: count and its variations. Erythropoiesis- stages, factors regulating. Reticulo-endothelial system (in brief) Haemoglobin - Anemia (in detail), types of Jaundice. Blood indices, PCV, ESR.

WBC: Classification. Morphology, functions, count, its variation of each. Immunity

Platelets: Morphology, functions, count, its variations

Hemostatic mechanisms: Blood coagulation–factors, mechanisms. Their disorders. Anticoagulants.

Blood Groups: Landsteiner's law. Types, significance, determination, Erythroblastosis foetalis.

Blood Transfusion: Cross matching. Indications and complications. Lymph: Composition, formation, circulation and functions.

Nerve Muscle Physiology [15 Hours]

Introduction: Resting membrane potential. Action potential – ionic basis and properties. Nerve: Structure and functions of neurons. Classification, Properties and impulse transmission of nerve fibres. Nerve injury – degeneration and regeneration.

Neuroglia: Types and functions.

Muscle: Classification. Skeletal muscle: Structure. Neuromuscular junction : Structure.

Neuromuscular transmission, myasthenia gravis, Excitation-Contraction coupling, Rigor mortis. Motor unit. Properties of skeletal muscles, Strength- Duration curve, Length- tension relationship, fatigue, load.

Smooth muscle: Structure, types, mechanism of contraction. Plasticity.

Cardiovascular System[20 Hours]

Introduction: Physiological anatomy and nerve supply of the heart and blood vessels. Organisation of CVS. Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential. Properties.

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.

Cardiac Output: Definition. Normal value. Determinants. Stroke volume and its regulation. Heart rate and its regulation. Their variations

Arterial Blood Pressure: Definition. Normal values and its variations. Determinants.

Peripheral resistance. Regulation of BP.

Arterial pulse.

Shock – Definition. Classification–causes and features Regional

Circulation: Coronary, Cerebral and Cutaneous circulation.

Cardiovascular changes during exercise.

Respiratory System [15 Hours]

Introduction: Physiological anatomy – Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system. Respiratory muscles. 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 Spirometry: Lung volumes and capacities. Timed vital capacity and its clinical significance. Maximum ventilation volume. Respiratory minute volume.

Dead Space: Types and their definition.

Pulmonary Circulation. Ventilation-perfusion ratio and its importance.

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. Regulation of Respirtation: Neural Regulation. Hering-breuer's reflex. Voluntary control. Chemical Regulation.

Hypoxia: Effects of hypoxia. Types of hypoxia. Hyperbaric oxygen therapy. Acclimatization Hypercapnoea. Asphyxia. Cyanosis – types and features. Dysbarism

Disorders of Respiration: Dyspnoea. Orthopnoea. Hyperpnoea, hyperventilation, apnoea, tachypnoea. periodic breathing – types
Artificial respiration
Respiratory changes during exercise.

Digestive System [5 Hours]

Introduction: Physiological anatomy and nerve supply of alimentary canal. Enteric nervous system
Salivary Secretion: Saliva: Composition. Functions. Regulation. Mastication
(in brief) Swallowing: Definition. Different stages. unctions.
Stomach: Functions. Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation. Peptic ulcer. Gastric motility. Gastric emptying. Vomiting.
Pancreatic Secretion: Composition, production, function. Regulation.
Liver: Functions of liver. Bile secretion: Composition, functions and regulation. Gall bladder: Functions.
Intestine: Succus entericus: Composition, function and regulation of secretion.
Intestinal motility and its function and regulation.
Mechanism of Defaecation.

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.
Mechanism of Urine Formation:Glomerular Filtration: Mechanism of glomerular filtration. GFR – normal value and factors affecting. Renal clearance. Inulin clearance. Creatinine clearance.
Tubular Reabsorption: Reabsorption of Na+, glucose, $_3$HCO -, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: TmG. Renal threshold for glucose. Tubular Secretion: Secretion of H+ and K+. PAH clearance.
Mechanism of concentrating and diluting the Urine: Counter-current mechanism.
Regulation of water excretion. Diuresis. Diuretics.
Micturition: Mechanism of micturition. Cystometrogram. Atonic bladder, automatic bladder. Acid-Base balance (very brief)
Artificial Kidney: Principle of haemodialysis. Skin and temperature regulation.

Endocrine System [10 Hours]

Introduction: Major endocrine glands. Hormone: classification, mechanism of action. Functions of hormones
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.

Pituitary-Hypothalamic Relationship.

Thyroid Gland:Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxoedema, Cretinism, Grave's disease.

Parathyroid hormnes: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism. Hyperthyroidism.Calcium metabolism and its regulation.

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. Endocrine Pancreas:Secretory cells, action, regulation of secretion of insulin and glucagon. Glucose metabolism and its regulation. Disorder: Diabetes mellitus. Calcitrol, Thymus and Pineal gland (very brief). Local Hormones.(briefly).

Reproductive System [5 Hours]

Introduction: Physiological anatomy reproductive organs. Sex determination. Sex

differentiation. Disorder

Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Regulation of secretion. Semen.

Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Oogenesis. Hormones:oestrogen and progesterone-action. regulation of secretion. Mentrual Cycle: Phases. Ovarian cycle. Uterine cycle. Hormonal basis. Menarche. Menopause. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Lactation. Contraception methods

Special Senses [10 Hours]

Vision: Introduction: Functional anatomy of eye ball. 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.

Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism.

Visual Reflexes: Accommodation, Pupillary and Light. Visual acuity and Visual field. Light adaptation. Dark adaptation.Color vision – color blindness. Nyctalopia.

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.

Taste: Taste buds. Primary tastes. Gustatory pathway. Smell: Olfactory membrane. Olfactory pathway.

Vestibular Apparatus: Crista ampullaris and macula. Funcions. Disorders

Nervous System [20 Hours]

Introduction: Organisation of CNS – central and peripheral nervous system. Functions of nervous system. Synapse: Functional anatomy, classification, Synaptic transmission. Properties.

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 trigeminalpathway. 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.

Motor Mechanism: Motor Cortex. Motor pathway: The descending tracts – pyramidal tracts, extrapyramidal tracts – 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

Spinal cord Lesions: Complete transection and Hemisection of the spinal cord. Cerebellum: Functions. Cerebellar ataxia.

Posture and Equilibrium: Postural reflexes – spinal, medullary, midbrain and cerebral reflexes. Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome

Reticular Formation and Limbic System: Components and Functions. Basal Ganglia: Structures included and functions. Parkinson's disease.

Cerebral Cortex: Lobes. Brodmann's areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.

EEG : Waves and features. Sleep: REM and NREM sleep.

CSF: Formation, composition, circulation and functions. Lumbar puncture and its significance. Blood brain barrier. Hydrocephalus.

ANS: Features and actions of parasymapathetic and sympathetic nervous system.

Physiology of Exercise [15 Hours]

A. Effects of acute and chronic exercise on

1) O2 transport
2) Muscle strength/power/endurance
3) B.M.R ./R.Q.
4) Hormonal and metabolic effect
5) Cardiovascular system

6) Respiratory system
7) Body fluids and electrolyte

B. Effect of gravity / altitude /acceleration / pressure on physical parameters

Applied Physiology [15Hours]

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.

a. Pulmonary Functions

1. Properties of gases, Mechanics of respiration, Diffusion capacity, special features of pulmonary circulation and their application.
2. Respiratory adjustments in exercises.
3. Artificial respiration
4. Breath sounds.

b. Cardio vascular Functions

1. Blood flow through arteries, arterioles, capillaries, veins and venuoles.
2. Circulation of Lymph, Oedema
3. Factors affecting cardiac output.
4. Circulatory adjustment in exercise and in postural and gravitational changes,
5. Pathophysiology of fainting and heart failure.

c. Muscles and Nervous System Functions

1. Peripheral nervous system, Neuromuscular transmission, Types of nerve fibres.
2. Action potential, Strength-duration curve, ECG, EMG, VEP, NCV
3. Degeneration and regeneration of nerve, Reactions of denervations.
4. Synaptic transmission, Stretch reflex- Mechanism and factors affecting it.
5. Posture, Balance and Equilibrium/Coordination of voluntary movement
6. Voluntary motor action, clonus, Rigidity, Discordination,

i Special senses- Vision, taste, hearing, vestibular, Olfaction
ii Sympathetic and Parasympathetic regulation, Thermoregulation,

d. Blood functions

i Thalassemia Syndrome, Hemophilia, VWF
ii Anemia, Leucocytosis
iii Bone marrow transplant

e. Metabolic Functions

Diabetes Mellitus, Physiological basis of Peptic Ulcer, Jaundice, GIT disorders and Dietary fiber, Thyroid functions, Vitamins deficiency,

PRACTICAL

I. Haematology[20 Hours]

To be done by the students

iii. Study of Microscope and its uses
iv. Determination of RBC count
v. Determination of WBC count
vi. Differential leukocyte count

vii. Estimation of hemoglobin
viii. Calculation of blood indices
ix. Determination of blood groups
x. Determination of bleeding time
xi. Determination of clotting time

Demonstrations only

1. Determination of ESR
2. Determination of PCV

II. Clinical Examination [20 Hours]

ii. Examination of Radial pulse.
iii. Recording of blood pressure
iv. Examination of CVS
v. Examination of Respiratory system
vi. Examination of Sensory system
vii. Examination of Motor System
viii. Examination of reflexes
8. Examination of cranial nerves

III. Amphibian Experiments – Demonstration and Dry charts Explanation. [15 Hours]

1. Instruments used for frog experiments. Kymograph, heart liver, Muscle trough, stimulator.
2. Simple muscle curve.
3. Effect of increasing the strength of the stimuli
4. Effect of temperature on muscle contraction.
5. Effect of two successive stimuli.
6. Effect of Fatigue.
7. Effect of load on muscle contraction
8. Genesis of tetanus and clonus.
9. Velocity of impulse transmission.
10. Normal cardiogram of amphibian heart.
11. Properties of Cardiac muscle
12. Effect of temperature on cardiogram.

IV. Recommended Demonstrations [5 Hours]

1. Spirometry
2. Artificial Respiration
3. ECG
4. Perimetry
5. Mosso's Ergometry

Recommended text books:

1. Text book of medical physiology – Guyton Arthur
2. Concise medical physiology – Chaudhuri Sujit K.
3. Human Physiology – Chatterjee C.C.
4. Text book of practical Physiology – Ranade.
5. Text of Physiology – A.K.Jain.
6. Basics of Medical physiology- Venkatesh D & Sudhakar H H
7. Manipal Manual of Physiology – Prof. C N Chandrashekar

Reference:

8. Review of Medical Physiology – Ganong William F.
9. Physiological basis of Medical practice – Best & Taylor

2nd semester

BIOMECHANICS

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 Musculo skeletal system. Students are taught to understand the various quantitative methods of movement. Mechanical principles of various treatment methods are studied. Study of posture and gait are also included.

Subject Title	: BIOMECHANICS
Duration	: 7 - 12 Months
Total Hours	: 240 Hours
Theory	: 150
Practical	: 90 Hours
Total Hours / Week	: 16 Hours
Method of Assessment	: Written, Oral, Practical

Second semester-

THEORY

1. **Basic Concepts in Biomechanics: Kinematics and Kinetics [3 Hours]**

Types of Motion, Location of Motion, Direction of Motion, Magnitude of Motion, Definition of Forces, Force of Gravity, Reaction forces, Equilibrium, Objects in Motion, Force of friction, Concurrent force systems, Parallel force systems, Levers, Pulleys Work, Moment arm of force, Force components, Equilibrium of levers

2. **Joint structure and Function [3 Hours]**

Joint design, Materials used in human joints, General Properties of connective tissues , Joint function, Joint motion.

3. **Muscle structure and function [3 Hours]**

Mobility and stability functions of muscles, Elements of muscle structure, Muscle function

4. **Biomechanics of the Thorax and Chest wall [3Hrs]**

General structure and function, Rib cage movements and the muscles associated with the rib cage

5. **The Tempero-mandibular Joint [2 Hours]**

General features, structure and function

6. **Biomechanics of the vertebral column [10 Hours]**

General structure and function, Regional structure and function – Cervical region, thoracic region, lumbar region, sacral region, Muscles of the vertebral

column, Ligaments of Vertebral Column

7. **Biomechanics of the peripheral joints (to include kinetics and kinematics) [52 Hours]**

The shoulder complex: Structure and components of the shoulder complex and their integrated function
The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex.
The wrist and hand complex: Structural components and functions of the wrist complex; structure of the hand complex; prehension; functional position of the the wrist and hand.
The hip complex: structure and function of the hip joint.
The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint.
The ankle and foot complex.: structure and function of the ankle joint, subtalar joint, talocalcaneonavicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints, structure and function of the plantar arches, muscles of the ankle and foot.

8. **Analysis of Posture and Gait [9 Hours] :**

Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture, General features of gait, gait initiation, kinematics and kinetics of gait, energy requirements, kinematics and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running.

9. **Movement Analysis [2 hours] :** ADL activities like sitting – to standing, lifting, various grips , pinches.

10.Goniometry [2 hours]: Parts, types, principles and uses of a goniometry. Techniques for measurement of ROM of all peripheral joints.

11. Walking Aids [1 hour]: Parallel bars, crutches, canes, walkers – types, parts and uses.

The following topics are part of applied Biomechanics and are required to be taught but not for examination.

General effects of disease, injury and immobilization. Effects of immobilization, injury and aging ,Changes in normal structure and function I relation to pregnancy, scoliosis and COPD Effects of posture on age, pregnancy, occupation and recreation;

PRACTICAL: [100 Hours] shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The demonstrations may be done on models or skeleton.

The student shall be taught and demonstrated to analysis for activities of daily living – ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur.

Measurement of Joint ROM using goniometer.

Identification of walking aids.

Recommended Text books :

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.

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

BIOCHEMISTRY

Course Objectives: At the end of the course, the student will be able to understand the molecular and functional organizations of cells, biomolecules and their roles, biochemical/molecular aspects of health and disease. The student shall also be able to perform routine and advanced laboratory

procedures relevant to health and diseases.

Subject Title	: BIOCHEMISTRY
Duration	: 7 - 12 months
Total Hours	: 75 hours
Theory	: 60 hours
Demonstration /Practical	: 15 Hours
Total Hours / Week	: 5 Hours
Method of Assessment	: Written,

Second semester – THEORY

1. **Nutrition [7 Hours]** Introduction, Importance of nutrition Calorific values, Respiratory quotient – Definition, and its significance Energy requirement of a person Basal metabolic rate: Definition, Normal values, factor affecting BMR Special dynamic action of food, Physical activities - Energy expenditure for various activities. Calculation of energy requirement of a person Balanced diet, Recommended dietary allowances, Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers Role of lipids in diet. Role of proteins in diet: Quality of proteins - Biological value, net protein utilization, Nutritional aspects of proteins-essential and non-essential amino acids. Nitrogen balance Nutritional disorders

2. Carbohydrate Chemistry [3 Hours]
Definition, general classification with examples, Glycosidic bond Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides. Glycosaminoglycans (mucopolysaccharides)

3. Lipid Chemistry [3 Hours]
Definition, general classification . Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol, Essential fatty acids and their importance Lipoproteins: Definition, classification, properties, Sources and function Ketone bodies

4. Amino-acid Chemistry [3 Hours]
Amino acid chemistry: Definition, Classification, Peptide bonds Peptides: Definition, Biologically important peptides Protein chemistry: Definition, Classification, Functions of proteins,

5. Enzymes [3 Hours]
Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples, Factors effecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymology (clinical significance of enzymes)

6. Nucleotide and Nucleic acid Chemistry [2 Hours]
functions of free nucleotides in body. Difference between DNA and RNA, Functions of DNA. functions of tRNA, rRNA, mRNA.

7. Digestion and Absorption [3 Hours]

General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption – Lactose intolerance,

8. **Carbohydrate Metabolism [5 Hours]** Introduction, Glycolysis – Aerobic, Anaerobic Citric acid cycle, Substrate level phosphorylation Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen, Gluconeogenesis, Cori cycle Hormonal regulation of glucose, Glycosuria, Diabetes mellitus,

9. Lipid Metabolism [5 Hours]

Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids -oxidation of fatty acids, Lipogenesis - Denovo synthesis of fatty acids, triacylglycerol synthesis, fat metabolism in adipose tissues Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis, Rothera's test Cholesterol etabolism: synthesis, degradation, cholesterol transport Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases) Hypocholesterolemic agents, Common hyperlipoproteinemia, Fatty liver

10. Amino acid and Protein Metabolism [3 Hours]

Catabolism of amino acids - Introduction, transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle Specialized products formed from amino acids - from glycine, arginine, methionine, phenylalanine and tyrosine.

11. Vitamins [7 Hours]

Definition, classification according to solubility,
Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity

12. Mineral Metabolism [2 Hours]

Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper. Phosphate, calcium and iron in detail

14. Muscle Contraction [2 Hours]

Contractile elements in muscle, briefly on the process of muscle contraction,
Energy for muscle contraction.

16 Hormone Action [2 Hours]

Definition, classification, Mechanism of hormone action. Receptors, signal transduction, second messengers and cell function

17 Acid-Base balance[2 Hours]

Acids, bases and buffers, pH. Buffer systems of the body, bicarbonate buffer system
Role of lungs and kidneys in acid base balance, Acid base imbalance

18 Water balance[1 Hour]

Water distribution in the body, Body water, water turnover, Regulation of water

balance: role of ADH and thirst centre

Demonstration
Diabetic profile, cardiac profile, and gout.

Recommended Text books

1. MURRAY [ROBERT KK], Harper's Bio Chemistry Ed 24, Prentice Hall. 1996, p925, Rs. 650/-
2. RAMAKRISHNA [S], PRASANNA [KG], RAJAN [R], Text Book of Medical Biochemistry, Ed 1, orient Langman, Bombay 1980, p717.
3. VASUDEVAN [DM] and SREE KUMARI [S], Text Book of Bio Chemistry for Medical students, Ed 1, Jaypee Brothers, New Delhi, 1995, p637, Rs.175/-.
4. DAS [Debajyothi], Biochemistry, Ed. 7, Academic Publishers Calcutta, 1992, p648, Rs. 175/-.
5. PRASAD RM, RM's Physiotherapy Textbook Series, Text book of Biochemistry for Bachelor of Physiotherapy First Edition, RM Publications, Mangalore.

Reference

1. LEHININGER [Albert] et. al., Principles of Biochemistry, Ed. 3, LBS Publishers, Delhi, 1993, p1143, Rs.795/-
2. ORTEN [James M] and NEUHAUS [OHO.W]. Human Biochemistry, Ed. 9, Mosby, St.Louis, 1975 p994.
3. Strayer [LUBERT], Biochemistry, Ed. 4, WH, Freeman & Co., Ny.1995, p1064, $49.95
4. DEVLIN [Thomas M], Biochemistry with Clinical Correalation, Ed. 4, Willey Libs, Ny 1997, p1186, $30.95.

PSYCHOLOGY AND SOCIOLOGY

Course description: Human Psychology involves the study of various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups. Sociology will introduce student to the basic sociology concepts, principles and social process, social institutions [in relation to the individual, family and community] and the various social factors affecting the family in rural and urban communities in India will be studied. The study of these subjects will help the student to understand their clients while assessment and while planning appropriate treatment methods.

Subject Title	: PSYCHOLOGY & SOCIOLOGY
Duration	: 7 -12 Months
Total Hours	: 90 Hours
Theory	: 90 Hours (45 + 45 Hours)
Total Hours / Week	: 6 Hours (3 +3 Hours)
Method of Assessment	: Written

Second semester

Section-A

THEORY PSYCHOLOGY

1. **Introduction to Psychology (6 Hours)**
   a) Schools: Structuralism, functionalism, behaviorism, Psychoanalysis.
   b) Methods: Introspection, observation, inventory and experimental method.
   c) Branches: pure psychology and applied psychology
   d) Psychology and physiotherapy

2. **Growth and Development (6 Hours)**

a) Life span: different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age).

b) Heredity and environment: role of heredity and environment in physical and psychological development, —Nature v/s Nurture controversy.

3. Sensation, attention and perception (6 Hours)
   a) Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense.
   b) Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants)

   c) Perception: Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (past experience and context)

   d) Illusion and hallucination: different types

4. **Motivation (4 Hours)**
   a) Motivation cycle (need, drive, incentive, reward).
   b) Classification of motives.
   c) Abraham Maslow's theory of need hierarchy

5. **Frustration and conflict (2 Hours)**
   a) Frustration: sources of frustration.
   b) Conflict: types of conflict.
   c) Management of frustration and conflict

6. **Emotions (6 Hours)**
   a) Three levels of analysis of emotion (physiological level, subjective state, and overt behavior).
   b) Theories of emotion
   c) Stress and management of stress.

7. **Intelligence (6 Hours)**
   a) Theories of intelligence.
   b) Distribution of intelligence.
   c) Assessment of intelligence

8. **Thinking (4 Hours)**
   a) Reasoning : deductive and inductive reasoning
   b) Problem solving: rules in problem solving (algorithm and heuristic)
   c) Creative thinking: steps in creative thinking, traits of creative people

9. **Learning (8 Hours)**
   a) Factors effecting learning.
   b) Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.
   c) 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.

10. **Personality (8 Hours)**

   a) Approaches to personality: type & trait, behavioristic, psychoanalytic and humanistic approach.

   b) Personality assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques.

c) Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.

11. Social psychology (4 Hours)

a) Leadership: Different types of leaders. Different theoretical approaches to leadership.
b) Attitude: development of attitude. Change of attitude

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.

SOCIOLOGY

Section-B

1. Introduction:

a. Meaning- Definition and scope of sociology
b. Its relation to Anthropology, Psychology, Social Psychology.
c. Methods of Sociological investigations- Case study, social survey, questionnaire, Interview and opinion poll methods.
d. Importance of its study with special reference to Health Care Professionals.

b) Social Factors in Health and disease situations:

a. Meaning of social factors
b. Role of social factors in health and illness

2. Socialization :

a) Meaning and nature of socialization
b) Primary, Secondary and Anticipatory socialization
c) Agencies of socialization

3. Social Groups :

a) 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.

4. Family:

a) The family, meaning and definitions.
b) Functions of types of family
c) Changing family patterns
d) Influence of family on the individuals health, family and nutrition, the

effects of sickness in the family and psychosomatic disease and their importance to physiotherapy.

5. Community :

a) Rural community : Meaning and features –Health hazards of ruralities, health hazards to tribal community.
b) Urban community : Meaning and features- Health hazards of urbanities.

7. Culture and Health :

a) Concept of Health
b) Concept of Culture
c) Culture and Health
d) Culture and health disorders.

8. Social change :

a) Meaning of social changes.
b) Factors of social changes.
c) Human adaptation and social change
d) Social change and stress.
e) Social change and deviance.
f) Social change and health programme
g) The role of social planning in the improvement of health and rehabilitation.

9. Social Problems of disabled :

Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems.

a) Population explosion
b) Poverty and unemployment
c) Beggary
d) Juvenile delinquency
e) Prostitution
f) Alchoholism
g) Problems of women in employment
h) geriatric problems
i) Problems of underprivileged.

10. Social Security :

a) Social security and social legislation in relation to the disabled.

1. Social worker :

a) Meaning of Social Work
b) The role of a Medical Social Worker

Recommended Text Books:

1. Sachdeva and Vidyabushan, Introduction to the study of sociology

2. INDRANI T K, Text Books of Sociology for Graduates Nurses and Physiotherapy Students, JP Brothers, New Delhi,10

3rd semester

EXERCISE THERAPY

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.

Subject Title	:EXERCISE THERAPY
Duration	: 13 – 18 Months
Total Hours	: 240
Theory	: 105 Hours
Practical	: 135 Hours
Total Hours / Week	: 16 Hours
Method of Assessment	: Written, Oral, Practical

1. **Introduction to Exercise Therapy [3 Hours]**

The aims of Exercise Therapy, The techniques of Exercise Therapy, Approach to patient's problems, Assessment of patient's condition – Measurements of Vital parameters, starting

Positions – Fundamental positions & derived Positions, Planning of Treatment

2. Methods of Testing [15 Hours]

a) Functional tests

b) Measurement of Joint range: ROM-Definition, Normal ROM for all peripheral joints & spine, Goniometer-parts, types, principles, uses, Limitations of goniometry, Techniques for measurement of ROM for all peripheral joints

· Tests for neuromuscular efficiency 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 Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf. Static power Test, Dynamic power Test, Endurance test, Speed test

c) Tests for Co-ordination

d) Tests for sensation

e) Pulmonary Function tests

f) Measurement of Limb Length: true limb length, apparent limb length, segmental limb length

g) Measurement of the angle of Pelvic Inclination

3. Relaxation [4 Hours]

Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation-Principles & uses: General, Local, Jacobson's, Mitchel's, and additional methods.

4. Passive Movements [4 Hours]

Causes of immobility, Classification of Passive movements, and Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements.

5. Active Movements [6 hours]

Definition of strength, power & work, endurance, muscle actions. Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction &relaxation, muscle fiber type, motor unit, force gradation. Causes of decreased muscle performance Physiologic adaptation to training: Strength & Power, Endurance. Types of active movements Free exercise: Classification, principles, techniques, indications, contraindications, effects and Uses Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses Types of resisted exercises: Manual and Mechanical resistance exercise, Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.

6. Specific exercise regimens:

Isotonic: de Lormes, Oxford, MacQueen, Circiut weight training Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle Isometrics, Isokinetic regimens

7. Stretching [3 Hours]

Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions and contraindications of stretching, Techniques of stretching.

8. Proprioceptive Neuromuscular Facilitation [6 Hours]

Definitions & goals, Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb Procedure: components of PNF, Techniques of facilitation Mobility: Contract relax, Hold relax, Rhythmic initiation Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization Stability: Alternating isometric, rhythmic stabilization Skill: timing for emphasis, resisted progression Endurance: slow reversals, agonist reversal

9. Suspension Therapy [6 Hours]

Definition, principles, equipment's & accessories, Indications & contraindications, Benefits of suspension therapy Types of suspension therapy: axial, vertical, pendular types. Techniques of suspension therapy for upper limb Techniques of suspension therapy for lower limb

10. Functional Re-education [4 hours]

Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lowerlimb and Upperlimb activities.

11. Aerobic Exercise [4 Hours]

Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.

12. Manual Therapy & Peripheral Joint Mobilization [5 Hours]

Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan

Biomechanical basis for mobilization, Effects of joint mobilsation, Indications and Contra-indiactions, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

13. Balance [4 Hours]

Definition Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output Components of balance (sensory, musculoskeletal, biomechanical) Causes of impaired balance, Examination & evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types Balance retraining

14. Co-ordination Exercise [4 Hours]

Anatomy & Physiology of cerebellum with its pathways Definitions: Co-ordination, Inco-ordination Causes for Inco-ordination, Test for co-ordination: equilibrium test, non-equilibrium

test Principles of co-ordination exercise Frenkel's Exercise: uses of Frenkel's exercise, technique of Frenkel's exercise, progression, home exercise.

15. Posture [3 Hours]

Definition, Active and Inactive Postures, Postural Mechanism, Patterns of Posture, Principles of re-education: corrective methods and techniques, Patient education.

16. Walking Aids [3 hours]

Types: Crutches, Canes, Frames; Principles and training with walking aids

17. Massage [4 Hours]

History and Classification of Massage Technique Principles, Indications and Contraindications Technique of Massage Manipulations Physiological and Therapeutic Uses of Specific Manipulations

18. Hydrotherapy [3 Hours]

Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipment's, techniques, Effects and uses, merits and demerits

19. Individual and Group Exercises [3 Hours]

Advantages and Disadvantages, Organization of Group exercises, Recreational Activities and Sports

Practical's:

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory. The student must be able to evaluate and apply judiciously the different methods of exercise therapy techniques on the patients. They must be able to

1. Demonstrate the technique of measuring 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 PNF techniques
5. Demonstrate exercises for training co-ordination – Frenkel's exercise
6. Demonstrate the techniques of massage manipulations
7. Demonstrate techniques for functional re-education
8. Assess and train for using walking aids
9. Demonstrate mobilization of individual joint regions
10. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles

11. Demonstrate the techniques for muscle stretching
12. Assess and evaluate posture and gait
13. Demonstrate to apply the technique of passive movements
14. Demonstrate various techniques of Active movements
15. Demonstrate techniques of strengthening muscles using resisted exercises
16. Demonstrate techniques for measuring limb length and body circumference.

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.

PATHOLOGY ANDMICROBIOLOGY
(120HOURS)

Pathology

Section – A

COURSE OBJECTIVES: At the end of the course, the learner shall be able to explain the general mechanisms of cell injury and reaction to injury, explain the basic principles of inflammation and their clinical manifestations, Explain hemodynamic alterations that result in disease, Explain the mechanism of anemias and leukemias and principles of clinically relevant anemias and leukemias, Explain the basic principles of tumrogenesis and tumor spread, Explain the principles of atherosclerosis and myocardial infarction, Explain the morphology of important diseases affecting various other systems.

Subject Title	: PATHOLOGY
Duration	: 13 – 18 Months
Total Hours	: 60
Theory	: 45 Hours
Practical	: 15 Hours
Lecture + Practical	: 4 Hours / Week
Method of Assessment	: Written

1. Cell injury and adaptations

a) Introduction to pathology
b) Agents causing cell injury
c) Morphology of injured cell
d) Necrosis / Gangrene / Apoptosis
e) Pathological calcification

2. Inflammation and Repair

a) Vascular and cellular events in acute inflammation
b) Mediators of inflammation

c) Examples for granulomatous inflammation
d) Healing by primary and secondary intensions

3. Immunopathology

a) Hypersensitivity reactions with examples
b) Immunodeficiencies and HIV
c) Auto-immune disorders

4. Infectious diseases

1. Tuberculosis
2. Leprosy
3. Syphilis
4. Malaria
5. Hydatid disease

6. Hemodynamics (circulatory disturbances)

a) Edema
b) Chronic venous congestion
c) Thrombosis and embolism
d) Infarction
e) Shock

7. Neoplasia

a) Atrophy, hypertrophy, dysplasia, metaplasia
b) Precancerous lesions
c) Definition of neoplasm, classification of tumors
d) Differences between benign and malignant tumors
e) Spread of malignant tumors
f) Carcinogenesis
g) Basic tumors of epithelium and mesenchyme

8. Nutritional disorders

a) PEM
b) Vit-A, Vit-D and Vit-C

9. Genetic disorders

a) Basic concepts of inheritance
b) Some examples for numerical and structural disorders

10. Hematology

a) Anemia – definition, classification, iron deficiency and megalobalstic anemias
b) Hemolytic anemias – general laboratory tests
c) Transfusion reactions
d) Diseases due to defective coagulation
e) Platelet disorders
f) Leucocyte disorders – cytosis and cytopenias, leukemias, myeloma.
g) Blood groups and cross matching
h) Blood components

11. Respiratory system

a) Pneumonias
b) Occupational lung diseases
c) Obstructive lung disease
d) Restrictive lung disease
e) Lung tumors

12. Cardiovascular system

a) Atherosclerosis
b) Endocarditis
c) Myocardial infarction
d) Hypertension and hypertensive heart disease
e) Tumors of blood vessels

13. Alimentary tract

a) Carcinoma of oral cavity
b) Gastric ulcer and carcinoma
c) Tumors of intestines
d) Common Salivary gland tumors
e) Pancreatitis

14. Hepatobiliary system

a) Jaundice
b) Hepatitis
c) Cholelithiasis
d) Alcoholic liver disease
e) Common liver tumors

15. Lymphoreticular system

a) Specific infective lymphadenitis
b) Lymphomas (Hodgkin's and non-Hodgkin's)
c) Causes for splenomegaly

16. Musculoskeletal system

a) Osteomyelitis
b) Bone tumors
c) Rheumatoid arthritis / osteoarthritis / Gout

17. **Endocrines**

a) Diabetes mellitus
b) Goitre, autoimmune thyroiditis
c) Tumors of thyroid

18. **Central nervous system**

a) Meningitis (pyogenic and Tuberculous)

b) Cysticercosis
c) Astrocytoma, meningioma / medulloblastoma

19. **Dermatopathology**

a) Melanoma
b) Squamous cell carcinoma
c) Basal cell carcinoma

Practical [15 Hours]

Demonstration of Slides – The students may be demonstrated the common histo-pathological, hematological and cytological slides and specimens and charts and their interpretations.

Recommended Textbooks

1. Text book of pathology: Harshmohan
2. General systemic pathology: Churchill Livingstone
3. Text book of Pathology: Robbins
4. Robbin's Pathologic basis of disease 8th edition
5. Text book of Pathology, Emanuel Rubin

MICROBIOLOGY

Section B:

Course description: The student at the end of the Microbiology course should be able to describe the etiology , modes of transmission, clinical manifestations and complications of common infectious diseases, Describe the mechanism of immunity to infections, Describe the principle of Sterilization and Disinfectants, Identify microbial ecology of specialized areas in the hospital and prevent the possible spread of infections.

Subject Title	: MICROBIOLOGY
Duration	: 13 – 18 Months
Total Hours	: 60
Theory	: 45 Hours
Practical	: 15 Hours
Lecture + Practical	: 4 Hours / Week
Method of Assessment	: Written

1. GENERAL MICROBIOLOGY

Introduction and significant milestones in history of microbiology
Contributions of : Robert Koch / Koch's postulates, Louis Pasteur, Antony Van Leeuwenhoek, Edward Jenner, Semmelweis
Classification of microbes :
Bacteria : shape & Gram stain
Fungus : Yeast, Moulds, Yeast like,
Dimorphic Virus : DNA and RNA virus
Parasites : Protozoa, Nematodes, Cestodes , Trematodes
Bacterial cell: Anatomy
Composition, types, functions , detection and significance of cell wall , cytoplasmic membrane, flagella, fimbriae, capsule, spore
Bacterial cell : Physiology
Nutrition, growth and multiplication of bacteria Bacterial growth curve
Sterilization & Disinfectants
Definition , Methods , Principles, articles used
Dry heat , Moist heat, Filtration, Radiation, Sterilization controls
Alcohol, Aldehydes, Phenols, Halogens, Oxidising agents , Surface acting agents, Dyes, Vapour phase disinfectants,Testing of disinfectants
Culture Media : Basal media, solid media , liquid media, Transport media, Selectivemedia, Differential media, Enriched media, Enrichment media, Anaerobic media Diagnostic methods in Microbiology
Infection : Commensal flora, Sources of infection and modes of transmission Types of infectious diseases

Hospital infections : Types and prevention
Antibiotics : Mechanism of resistance, implications and detection methods Standard precautions : Hand hygiene, PEP, Needle stick

injuries

2. Immunology

Immunity : Innate & Acquired . Mechanism of immunity Antigen : Nature of antigens, factors affecting antigenicity Antibody :Structure, classes, Properties Antigen-Antibody reaction: General Properties Agglutination, Precipitation, ELISA, Immunofluorescence, Immunochromatography, Chemiluminescence Immune response : Characteristics and mechanisms of Humoral & Cell mediated immunity Monoclonal antibodies : Properties , Production and application in diagnostic Microbiology Hypersensitivity : definition , types, mechanism & outcome Autoimmunity : mechanism and diseases Vaccines : Types, Immunization schedule

3. SYSTEMATIC BACTERIOLOGY

Introduction to systematic bacteriology
Morphology, modes of transmission, clinical features, sample collection & laboratory diagnosis of : Gram positive cocci : Staphylococcus, Streptococcus, Pneumococcus Gram negative cocci : Gonococcus, Meningococcus Gram positive bacilli : Corynebacterium , Clostridia, Bacillus Gram negative bacilli :,Escherichia coli, Klebsiella, Proteus , Shigella, Salmonella , Vibrio cholera, Pseudomonas. Acid fast bacilli : Mycobacteria Spirochaetes : Treponema, Leptospira,

4. MYCOLOGY

Introduction and classification of fungi Morphology, modes of transmission, clinical features, sample collection & laboratory diagnosis of :
Superficial mycoses : Dermatophytes Subcutaneous mycoses : Mycetoma, Chromoblastomycosis, Sporotrichosis, Rhinosporidiosis Opportunistic mycoses : Candida , Cryptococcus Aspergillus, Penicillium, Mucor, Rhizopus Laboratory diagnosis of Fungal Infections

5. PARASITOLOGY

Introduction and classification of Parasites Morphology, modes of transmission, clinical features, sample collection & laboratory diagnosis of : Intestinal and genital:
E histolytica, free living amoeba, Giardia, Trichomonas Blood protozoa : Leishmania , Malaria, Trypanosomes Opportunistic infections: Toxoplasma, Cestodes: Taenia solium, Taenia saginatum , Echinococcus Nematodes: Intestinal: T.trichiura, A.lumbricoides , Hookworm, S.stercoralis, E. vermicularis Tissue: W bancrofti, B malayi, D medinensis

6. VIROLOGY

Introduction to Virology : General Properties, Structure, Classification & Replication of viruses Structure , modes of transmission, clinical features, sample collection & laboratory diagnosis of :
DNA virus : Herpes virus, Adeno virus, Hepatitis B, Human Papilloma virus
RNA virus : Picornaviruses, Myxoviruses, Arboviruses, Rhabdo virus, Hepatitis , HIV

Practical [15 Hours]

1. Demonstration of Microscopes and its uses , Principles, uses and demonstration of common sterilization equipment, Demonstration of common culture media, Demonstration of motility by hanging drops method, Demonstration of Gram Stain, ZN Stain , Demonstration of Serological test: ELISA,
2. Demonstration of Fungus

RECOMMENDED TEXTBOOKS

1) Reba Kanungo editor. AnanthaNarayan and Paniker's Textbook of Microbiology. 10th ed.Universities Press, Hyderabad , India; 2017
2) Baveja CP. Textbook of Microbiology 3rd ed. Arya Publications, New Delhi, India; 2015
3) Baveja CP and Baveja V. Medical Parasitology. 3rd ed. Arya Publications, New Delhi, India; 2015
4) Brooks GF, Caroll KC, Butel JS, Morse SA. Jawetz, Melnick & Adelberg's Medical Microbiology. 24th ed. Appleton and Lange, London; 2007
5) Chakraborthy P.Textbook of Medical Parasitology. 1st ed. New Central Book Agency, Kolkata, India; 2004
6) Jayaram CKJ. Medical Parasitology.4th ed. Jaypee, New Delhi, India; 1997
7) Baveja CP and Baveja V. Textbook of Microbiology for Physiotherapy. 1st ed. Arya Publications, New Delhi, India; 2016

RESEARCH METHODOLOGY AND BIOSTATISTICS

Course Description: This course will introduce to the student the basic research methodology, statistical concepts: methods of statistical analysis: and interpretation of data.

Subject Title	: Research Methodology and Biostatistics
Duration	: 13 – 18 Months
Total Hours	: 45
Theory	: 45 Hours
Lecture	: 3 Hours / Week
Method of Assessment	: Written

Research Methodology

Section A: [20 Hours]

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.

2. Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem

3. Research design: Meaning of research design, 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

6. Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.

7. Sampling fundamentals, need for sampling & some fundamental definitions, Important sampling distributions

8. Processing & analysis of data: Processing operations, problems in processing, Types of Analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.

10. Computer technology: Introduction to Computers, computer application in research, computers & researcher.

11. Ethical issues in research

BIOSTATISTICS

Section – B [20 Hours]

1. Introduction: Meaning, definition, characteristics of statistics., Importance of the

study of statistics, Branches of statistics, Statistics and health science including physiotherapy, Parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Measurement scales.

2. Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve.

3. Measure of Central Tendency: Need for measures of central Tendency, Definition and calculation of mean – ungrouped and grouped, Meaning, interpretation and calculation of median ungrouped and grouped., Meaning and calculation of mode, Comparison of the mean, median and mode, Guidelines for the use of various measures of central tendency.

4. Probability and Standard Distributions: Meaning of probability of standard distribution, The binominal distribution, The normal distribution, Divergence from normality – skew ness, kurtosis.

5. Sampling techniques: Need for sampling - Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors, Sampling variation and tests of significance.

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

CLINICAL OBSERVATION POSTINGS – I

Duration	: 13 - 18 Months
Total Hours	: 135
Method of Assessment	: Oral, Practical

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision.

1. Physiotherapy OPD
2. General Medicine & MICU
3. General Surgery & CTS-ICU
4. Orthopedics
5. Neurology
6. OBG
7. Prosthetic & Orthotic Unit (Artificial Limb Center)

4th semester

ELECTROTHERAPY

Course Description: In this course the student will learn the Principles, Techniques, and Effects, Indication, Contra-Indication and the dosage parameter for various indications of electro therapeutic modalities in the restoration of physical function. The objective of this course is that after 240 hours of lectures, demonstration, practical and clinics the student will be able to list the indications, contra indications, dosages of electro therapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

Subject Title	:ELECTROTHERAPY
Duration	: 19 – 24 Months
Total Hours	: 240
Theory	: 90 Hours
Practical	: 150 Hours
Total Hours / Week	: 16 Hrs
Method of Assessment	: Written, Oral, Practical

Theory

Section I:

Low frequency Currents

1. Basic types of current [1 Hour]
   a. Direct Current: types, physiological &therapeutic effects.
   b. Alternating Current

2. Types of Current used in Therapeutics [1 Hour]
   Modified D.C, Faradic Current, Galvanic Current, Modified A.C, Sinusoidal Current and Diadynamic Current.

3. Faradic Current: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, Dangers. [2 Hours]

4. Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra-Indications, Dangers, Effect of interrupted galvanic current on normally innervated and denervated muscles and partially denervated muscles. [2 Hours]

5. Sinusoidal Current & Diadynamic Current in Brief. [1 Hour]

6. HVPGS – Parameters & its uses [1 Hour]

7. Ionization / Iontophoresis : Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, would

healing. [1 Hour]

8. Cathodal / Anodal galvanism. [1 Hour]

9. Micro Current & Macro Current [1 Hour]

10. Types of Electrical Stimulators [1

    Hour] NMES- Construction

    component.

    Neuro muscular diagnostic stimulator- construction component
    Components and working Principles.

11. Principles of Application: Electrode tissue interface, Tissue Impedance, Types of Electrode, Size & Placement of Electrode – Waterbath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance. [2 Hours]

12. Nerve Muscle Physiology: Action Potential, Resting membrane potential, Propagation of Action Potential, Motor unit, synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, Stimulation for Tissue Repair. [2 Hours]

13. TENS: Define TENS, Types of TENS, Conventional TENS, Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placement of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications. [3 Hours]

14. Pain: Define Pain, Theories of Pain (Outline only), Pain Gate Control theory in detail. [2 Hours]

Section II
Electro-diagnosis

1. FG Test

2. SD Curve: Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle, Characters of Completely denervated Muscle, Chronaxie & Rheobase. [2 Hours]

Section III - Medium Frequency

1. Interferential Therapy: Define IFT, Principle of Production of IFT, Static Interference System, Dynamic Interference system, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications. [2 Hour]

2. Russian Current

3. Rebox type Current [1 Hour]

Section IV
Thermo & Actinotherapy (High Frequency Currents)

1. Electro Magnetic Spectrum. [1 Hour]

2. SWD: Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters [8 Hours]

3. Pulsed Electro Magnetic Energy: Principles, Production & Parameters of PEME, Uses of PEME. [1 Hour]

4. Micro Wave Diathermy: Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD. [2 Hours]

5. Ultrasound: Define Ultrasound, Frequency, Piezo Electric effects: Direct, Reverse, Production
of US, Treatment Dosage parameters: Continous & Pulsed mode, Intensity, US Fields: Near field, Far field, Half value distance, Attenuation, Coupling Media, Thermal effects, Non-thermal effects, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications & Contraindications, Dangers of Ultrasound. Phonophoresis: Define Phonophoresis, Methods of application, Commonly used drugs, Uses. Dosages of US. [8 Hours]

6. IRR: Define IRR,wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication. [2 Hours]

7. UVR: Define UVR, Types of UVR, UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel, PUVA apparatus. Physiological & Therapeutic effects. Sensitizers & Filters. Test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers. Dosages for different therapeutic effects, Distance in UVR lamp [8 Hours]

8. LASER: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER. Classifications of LASER. Energy density & power density [8 Hours]

Section V – Superficial heating Modalities

1. Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers. [2 Hours]

2. Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.[1 Hour]

3. Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.[1 Hour]

4. Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindications. [1 Hour]

5. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications. [1 Hour]

6. Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications. [1 Hour]

7. Magnetic Stimulation, Principles, Therapeutic uses, Indications & contraindication. [1 Hour]

8. Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosages. [4 Hours]

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 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. Electrical stimulation for the muscles supplied by the peripheral nerves
5. Faradism under Pressure for UL and LL
6. Plotting of SD curve with chronaxie and rheobase
7. Demonstrate FG test

8. Application of Ultrasound for different regions-various methods of application
9. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
10. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose
11. Demonstrate treatment method using IFT for various regions
12. Calculation of dosage and technique of application of LASER
13. Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy
14. Demonstrate the treatment method using whirl pool bath
15. Winding up procedure after any electrotherapy treatment method

Recommended Textbooks

1. Claytons 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.

PHARMACOLOGY

Course Description: This course introduces the student to basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy. The student after completing the course will be able to understand the general principles of drug action and the handling of drugs by the body. The student will be aware of the contribution of both drug and physiotherapy factors in the outcome of treatment.

Subject Title	: PHARMACOLOGY
Duration	: 19 - 24 months
Total Hours	: 45
Theory	: 45
Lecture	: 3 Hours / Week
Method of Assessment	: Written

General pharmacology

1. Introduction, Definition, Sources of drugs , Routes of drug administration
2. Pharmacokinetics – Distribution, Metabolism, Excretion and Plasma Half life
3. Pharmacodynamics
4. Tolerance, Dependence and Adverse effects
5. Factors modifying drug action

Autonomic nervous system

1. Adrenergic agonists
2. Adrenergic antagonists
3. Cholinergic agonists
4. Cholinergic antagonists

Cardiovascular Pharmacology

1. Drugs used in hypertension
2. Diuretics
3. Beta blockers
4. Calcium channel blockers
5. Angiotensin Converting Enzyme inhibitors
6. Angiotensin Receptor Blockers
7. Clonidine
8. Directly acting vasodilators –Hydralazine , Diazoxide
9. Nitrates
10. Drugs used in Peripheral Vascular disease
11. Cilastozole
12. Pentoxyphylline
13. Drug treatment of Postural hypotension, Anaphylactic and Neurogenic shock

Respiratory System

1. Drugs used in Bronchial asthma and Chronic Obstructive Pulmonary Disease

Blood

1. Anticoagulants, Antiplatelets, Thrombolytic agents

Neuropharmacology

1. Drugs used in Parkinson's disease
2. Sedative Hypnotics
3. Antipsychotic and antidepressants
4. Drugs used in neuropathic pain
    a. (Amitriptyline, Nortriptyline, Desipramine, Imipramine, Venlaflaxine, Duloxetine, Dextromethorphan, Phenytoin, Carbamazepine, Gabapentine, Tramadol, Oxycodone, Methadone, Levorphonol, Capsaicin)
5. Peripheral and centrally acting skeletal muscle relaxants and drug treatment of spasticity
6. Drugs used in treatment of cerebral ischemia (Piracetam, Aspirin)

Inflammatory / Immune Disease

1. Non-steroidal Anti-inflammatory drugs
2. Glucocorticoids
3. Drugs used in treatment of Rheumatoid arthritis, Osteoarthritis, Gout, Myasthenia gravis
4. Idiopathic inflammatory Myopathies (Prednisolone, Cyclophosphamide, Azathioprine, Cyclosporine, Rituximab, Anakinra, lemtuzumab, Tocilizumab, Abatacept, Mycophenolate Mofetil)
5. Systemic Lupus Erythmatosus (Hydroxychloroquine, Methylprednisolone, Azathioprine, Cyclophosphamide, Methotrexate, Mycophenolate Mofetil)
6. Scleroderma (Nifidepine, Nicardipine, Iloprost, Epoprostenol, Bosentan, Sitaxentan, Atorvastatin, D – Penicillamine, Cyclophosphamide, Mycophenolate Mofetil, Azathioprine, Methotrexate, Corticosteroids, Calcitriol, Imatinib, Rituximab)
7. Demyelinating diseases (Multiple sclerosis and polyneuropathies) Immunoglobulins, Corticosteroids

Endocrine system

1. Drugs used in Diabetes Mellitus

Geriatrics

1. Pharmacology in geriatric population
2. Adverse effect of special concern in the Elderly
3. Dementia

RECOMMENDED TEXTBOOKS

1. Whalen K. Lippincott Illustrated Reviews: Pharmacology, 6th edition Wolters Kluwer
   Philadelphia USA 2015
2. K.D. Tripathi. Essentials of Medical Pharmacology,7th edition, Jaypee Brothers, New Delhi 2013
3. RS Satoskar, Nirmala Rege, SD Bhandarkar. Pharmacology and pharmacotherapeutics. 24th edition, Elsevier India Gurgaon 2015
4. Padmaja Udaykumar. Medical Pharmacology. 5rd edition CBS Publishers & Distributors Pvt. Ltd New Delhi 2017

GENERAL MEDICINE & CARDIO-RESPIRATORY CONDITIONS

Subject Description: This subject follows the basic science subjects to provide the knowledge about relevant aspects of general medicine. The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that after 60 hours of lectures and discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various medical conditions.

Subject Title	: GENERAL MEDICINE & CARDIO-RESPIRATORY CONDITIONS
Duration	: 19 – 24 Months
Total Hours	: 60
Theory / Lecture	: 4 Hours / Week
Method of Assessment	: Written

1. Infection : Effects of Infection on the body – Pathology – source and spread of infection – vaccinations – generalized infections – rashes and infection – food poisoning and gasteroenteritis – sexually transmitted diseases – HIV infections and Aids [3 Hours]

2. Poisoning : Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides – Envenomation [2 Hours]

3. Food and Nutrition : Assessment – Nutritional and Energy requirements; Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition : Clinical features and treatment; Obesity and its related disorders : Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise and medications.[4 Hours]

4. Endocrine diseases : Common presenting symptoms of Endocrine disease – common classical disease presentations, clinical features and its management; Diabetes Mellitus : Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease – Complications of diabetes. [4 Hours]

5. Diseases of the blood : Examinations of blood disorders – Clinical manifestations of blood disease; Anemia – signs and symptoms – types and management ; Hemophilia - Cause

6. Clinical features severity of disease – management – complications due to repeated haemorrhages – complications due to therapy. [4 Hours]

7. Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Aetiology, clinical features, diagnosis, complications and treatment of the following

conditions : Reflux Oesophagitis, Achlasia Cardia, Carcinoma of Oesophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract ; Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions : Viral Hepatitis, Wilson's Disease, Alpha1-antitrypsin deficiency, Tumors of the Liver, Gall stones, Cholycystitis. [7 Hours]

8. Cardiovascular Disease : Examination of the Cardiovascular System – Investigations : ECG, Exercise Stress Testing, Radiology ; Clinical manifestations of Cardiovascular disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and

9. Treatment of following diseases and disorders of the heart : Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever – resulting in valve disorders, Ishemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest ; Examination and Investigations of diseases of arteries and veins ; Hypertension : Definition, causes, classification, types, assessment, investigations and management. [8 Hours]

10. Respiratory Disease : Examination of the Respiratory System – Investigations : Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis ; Clinical manifestations of Lung disease ; Patterns of lung disease – Chronic Obstructive Lung Disease and Restrictive Lung Disease ; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases : Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases, Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall ; Respiratory failure – Definition, types, causes, clinical features, diagnosis and management. [9 Hours]

11. Diseases of the Skin: Examination and clinical manifestations of skin diseases; Causes, clinical features and management of the following skin conditions : Leprosy, Psoriasis, Pigmentary Anomalies, Vasomotor disorders, Dermatitis, Coccal and Fungal Parasitic and Viral infections. [6 Hours]

12. Psychiatric Disorders: Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. [5 Hours]

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

GENERAL SURGERY & CARDIO-THORACIC SURGERIES

Subject Description: This subject follows the basic science subjects to provide the knowledge about relevant aspects of general surgery. The student will have a general understanding of the surgical conditions the therapist would encounter in their practice. The objective of this course is that after 60 hours of lectures and discussion the student will be able to list the indications for surgery, etiology, clinical features and surgical methods for various conditions.

Subject Title	: General Surgery & Cardiothoracic Surgeries
Duration	: 19 – 24 Months
Total Hours	: 75
Theory / Lecture	: 5 Hours / Week
Method of Assessment	: Written

1. Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management ; Nutrition in the surgical patient ; Wound healing – basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment. Hemostasis – components, hemostatic disorders, factors affecting bleeding during surgery. Transfusion therapy in surgery – blood components, complications of transfusion ; Surgical Infections ; General Post – Operative Complications and its management [6 Hours]

2. Reasons for Surgery ; Types of anaesthesia and its affects on the patient ; Types of Incisons ; Clips Ligatures and Sutures ; General Thoracic Procedures – Radiologic Diagnostic procedures, Endoscopy – types, Biopsy – uses and types. Overview and Drainage systems and tubes used in Surgery.[3 Hours]

3. Causes, Clinical Presentation, Diagnosis and treatment of the following Thoracic Trauma situations – Airway obstruction, Pnuemothorax, Hemothorax, Cardiac Tamponade, Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions. [4 Hours]

4. Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer. [3 Hours]

5. Disorders of the Chest Wall, Lung and Mediastinum – Definition, Clinical features, diagnosis and choice of management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis, Congenital tracheomalacia, Neoplasms of the trachea, Lesions of the Mediastinum. Carcinoma of the female breast. [5 Hours]

6. Disorders of the Heart – Definition, Clinical features, diagnosis and choice of management for the following disorders : 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 Insufficeiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors. [6 Hours]

7. Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of insision, muscles cut and complications. Lung surgeries : Pnumonectomy, Lobectomy, segmentectomy – Indications, Physiological changes and Complications ; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung. Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extracardiac Operations, Closed Heart surgery, Open Heart surgery. Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications. [6 Hours]

8. Diseases of the Arteries and Veins : Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases : Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins. [5 Hours]

9. Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Neprectomy, Prostectomy. [4 Hours]

10. Burn: Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management. Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft ; Flaps – Types and uses of Flaps. [4 Hours]

11. ENT: Common problems of ear, otitis media, Otosclerosis, functional achonia and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy. [3 Hours]

Recommended books:

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

CLINICAL TRAINING – II

Duration	: 19 - 24 Months
Total Hours	: 135
Method of Assessment	: Oral, Practical

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision.

1. Physiotherapy OPD
2. General Medicine & MICU
3. General Surgery & CTS-ICU
4. Orthopedics
5. Neurology
6. OBG
7. Prosthetic & Orthotic Unit (Artificial Limb Centre)

5th Semester

PHYSIOTHERAPY IN CARDIO RESPIRATORY AND GENERAL CONDITIONS

Subject Description: The subject is designed to provide knowledge in assessing and planning physiotherapy interventions for various General, Medical and Surgical conditions. The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs, and to provide appropriate interventions to the patient.

Subject Title	: Physiotherapy In Cardio Respiratory and General Conditions
Duration	: 25 – 30 Months
Total Hours	: 150
Theory	: 90 Hours
Practical	: 60 Hours
Total Hours / Week	: 10 Hrs
Method of Assessment	: Written, Oral, Practical

Theory: 90 Hours

1. Anatomical and Physiological differences between the Adult and Pediatric lung [1 Hour]

2. Bedside assessment of the patient-Adult & Pediatric[5 Hours]

3. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests [6 Hours]

4. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - Incentive Spirometry, CPAP,IPPB [3 Hours]

5. Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids – IPPB, CPAP, BiPAP [3 Hours]

6. Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT, Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning [3 Hours]

7. Drug therapy – Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers.[1 Hour]

8. 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 Hypergranulated Scars Keoloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues. [2 Hours]

9. 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 [2 Hours]

10. Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit [3 Hours]

11. Physiotherapy in Obstructive lung conditions [2 Hours]

12. Physiotherapy in Restrictive lung conditions [2 hours]

13. Management of breathlessness [2 hours]

14. Pulmonary Rehabilitation [4 Hours]

15. Physiotherapy following Lung surgeries [3 Hours]

16. Respiratory failure – Oxygen Therapy and Mechanical Ventilation [4 Hours]

17. Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – 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; Dealing with an Emergency Situation in the ICU[4 Hours]

18. Burns management - Role of physiotherapy in the management of burns, post grafted cases-Mobilization and Musculo-skeletal restorative exercises following burns [3 Hours]

19. Physiotherapy management following cardiac surgeries [3 Hours]

20. Cardiac Rehabilitation [4 Hours]

21. Physiotherapy management following PVD [3 Hours]

22. Abdominal Surgeries - Management of Pulmonary Restorative Dysfunction following Surgical procedures on Abdomen and Thorax [3 Hours]

23. Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes [3 Hours]

24. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases [3 Hours]

25. Home program and education of family members in patient care [2 Hours]

26. Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity. [5 Hours]

Practical: 60 Hours

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.

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
12. Physiotherapy in Obstetrics and Gynecology by Polden

CLINICAL ORTHOPEDICS, TRAUMATOLOGY & RHEUMATOLOGY

Subject description: This subject follows the basic science subjects to provide the knowledge about orthopedic conditions the therapist would encounter in their practice. The objective of this course is that after 60 hours of lectures and discussion the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

Subject Title	: Clinical Orthopedics, Traumatology & Rheumatology
Duration	: 25 – 30 Months
Total Hours	: 60
Theory / Lecture	: 4 Hours / Week
Method of Assessment	: Written

1. Introduction [3 Hours]

Introduction to orthopaedics. Clinical examination in an Orthopedic patient. Common investigative procedures. Radiological and Imaging techniques in Orthopeadics. Inflammation and repair, Soft tissue healing.

2. Traumatology [3 Hours]

Fracture: definition, types, signs and symptoms.Fracture healing.Complications of fractures.Conservative and surgical approaches.Principles of management – reduction (open/closed, immobilization etc). Subluxation/ dislocations – definition, signs and symptoms, management (conservative and operative).

3. Fractures and Dislocations of Upper Limb [6 Hours]

Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

Fractures of clavicle and scapula. Fractures of greater tuberosity and neck of humerus. Fracture shaft of humerus. Supracondylar fracture of humerus. Fractures of capitulum, radial head, olecranon, coronoid, and epicondyles. Side swipe injury of elbow. Both bone fractures of ulna and radius. Fracture of forearm – monteggia, galaezzi fracture – dislocation. Chauffer's fracture.Colle's fracture. Smith's fracture. Scaphoid fracture. Fracture of the metacarpals. Bennett's fracture. Fracture of the phalanges. (Proximal and middle.)

Dislocations of Upper Limb - Anterior dislocation of shoulder – mechanism of injury, clinical feature, complications, conservative management (Kocher's and Hippocrates maneuver), surgical management (putti plat, bankart's) etc. Recurrent dislocation of shoulder. Posterior dislocation of shoulder – mechanism of injury, clinical features and management. Posterior dislocation of elbow – mechanism of injury, clinical feature, complications & management.

4. Fracture of Spine [4 Hours]

Fracture of 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.

Fracture of Thoracic and Lumbar Regions - Mechanism of injury, clinical features, management —conservative and surgical of common fractures around thoracic and lumbar regions.Fracture of coccyx.

Fracture of Rib Cage - Mechanism of injury, clinical features, management for Fracture Ribs, Fracture of sternum.

5. Fractures and Dislocations of Lower Limb [5 Hours]

Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:
Fracture of pelvis. Fracture neck of femur – classification, clinical features, complications, management - conservative and surgical. Fractures of trochanters. Fracture shaft femur— clinical features, mechanism of injury, complications, management-conservative and surgical. Supracondylar fracture of femur. Fractures of the condyles of femur. Fracture patella. Fractures of tibial condyles. Both bones fracture of tibia and fibula. Dupuytren's fracture Maisonneuve's fracture. Pott's fracture – mechanism of injury, management. Bimalleolar fracture Trimalleolar fracture Fracture calcaneum – mechanism of injury, complications and management. Fracture of talus. Fracture of metatarsals—stress fractures jone's fracture. Fracture of phalanges. Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb. Anterior dislocation of hip. Posterior dislocation of hip. Central dislocation of hip. Dislocation of patella. Recurrent dislocation of patella.

6. Soft Tissue Injuries [3 Hours] - Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis.

Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee. Cruciate injuries of knee. Medial and lateral collateral injuries of knee. Lateral ligament of ankle. Wrist sprains. Strains- quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc. Tendon ruptures-Achilles, rotator cuff muscles, biceps, pectorals etc.

7. Hand Injuries [2 Hours]- mechanism of injury, clinical features, and management of the following - Crush injuries. Flexor and extensor injuries. Burn injuries of hand.

8. Amputations [2 Hours] - Definition, levels of amputation of both lower and upper limbs, indications, complications.

9. Traumatic Spinal Cord Injuries [2 Hours] - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.

10. Deformities [6 Hours] - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities.
Congenital Deformities - CTEV. CDH. Torticollis. Scoliosis. Flat foot. Vertical talus. Hand

anomalies- syndactyly, polydactyly and ectrodactly. Arthrogryposis multiplex congenita(amyoplasia congenita). Limb deficiencies- Amelia and Phocomelia. Klippel feil syndrome. Osteogenesis imperfecta(fragile ossium). Cervical rib. Acquired Deformities - Acquired Torticollis. Scoliosis. Kyphosis. Lordosis. Genu varum. Genu valgum. Genu recurvatum Coxa vara. Pes cavus. Hallux rigidus. Hallux valgus. Hammer toe. Metatarsalgia.

11. Disease of Bones and Joints [4 Hours]: Causes, Clinical features, Complications, Management- medical and surgical of the following conditions : Infective conditions: Osteomyelitis (Acute / chronic). Brodie's abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc. Arthritic conditions: Pyogenic arthritis. Septic arthritis. Syphilytic infection of joints. 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. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis. Metabolic Bone Diseases: Rickets. Osteomalacia, Osteopenia. Osteoporosis.

12. Inflammatory and Degenerative Conditions [4 Hours]: causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions : Osteoarthritis. Rheumatoid arthritis. Ankylosing spondylitis Gouty arthritis. Psoriatic arthritis. Hemophilic arthritis. Still's disease (juvenile rheumatoid arthritis). Charcot's joints. Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)

13. Syndromes [3 Hours]: Causes, Clinical features, complications, management-conservative and surgical of the following : Cervico brachial syndrome. Thoracic outlet syndrome. Vertebro- basilar syndrome. Scalenus syndrome. Costo clavicular syndrome. Levator scapulae syndrome. Piriformis syndrome.

14. Neuromuscular Disorders [3 hours]: Definition, causes, clinical feature, complications, management. (Multidisciplinary approach) medical and surgical of the following conditions : Cerebral palsy. Poliomyelitis. Spinal Dysraphism. Leprosy.

15. Cervical and Lumbar Pathology [3 Hours]: Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following :
Prolapsed interverbral disc (PID), Spinal Canal Stenosis. Spondylosis (cervical and lumbar) Spondylolysis. Spondylolisthesis. Lumbago/ Lumbosacral strain. Sacralisation. Lumbarisation. Coccydynia. Hemivertebra.

16. Orthopedic Surgeries [3 Hours]: Indications, Classification, Types, Principles of management of the following Surgeries : Arthrodesis. Arthroplasty (partial and total replacement). Osteotomy , External fixators. Spinal stabilization surgeries(Harrington's, Luque's, Steffi plating) etc , Limb re-attachments.

17. Regional Conditions [4 Hours]: Definition, Clinical features and management of the following regional conditions: Shoulder: Periarthritic shoulder (adhesive capsulitis). Rotator cuff tendinitis. Supraspinatus Tendinitis. Infraspinatus Tendinitis. Bicipital Tendinitis. Subacromial Bursitis. Elbow: Tennis Elbow. Golfer's Elbow. Olecranon Bursitis (student's elbow). Triceps Tendinitis. Wrist and Hand: De Quervain's Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture. Pelvis and Hip : IT Band Syndrome. Piriformis Syndrome. Trochanteric Bursitis. Knee: Osteochondritis Dissecans. Prepatellar and Suprapatellar Bursitis. Popliteal Tendinitis. Patellar Tendinitis. Chondromalacia Patella. Plica Syndrome. Fat Pad Syndrome (Hoffa's syndrome). Ankle and Foot: Ankle Sprains. Plantar Fasciitis / Calcaneal Spur. Tarsal Tunnel Syndrome. Achilles Tendinitis. Metatarsalgia. Morton's Neuroma.

Books Recommended:

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

EXERCISE PHYSIOLOGY, HEALTH & FITNESS

Subject description: This subject follows the basic science subjects to provide the knowledge about exercise physiology, health and fitness for understanding importance in general population. This subject would provide core knowledge of exercise and fitness training and its core components. After this course the student will be able to demonstrate an understanding of exercise intervention, fitness training for various populations with the knowledge of physiological response to exercise in various systems of our body. The student will be able to understand the designing and implementing the exercise management. .

Subject Title	: Exercise Physiology, Health & Fitness
Duration	: 25 – 30 Months
Total Hours	: 45
Theory / Lecture	: 3 Hours / Week
Theory /Practical hours	: 30 & 15 hours
Method of Assessment	: Written, oral, practical

1. Exercise physiology

a. Energy metabolism, Oxygen debt
b. Acute cardio vascular changes during exercise, difference between mild, moderate and severe exercise,
c. Concept of endurance and endurance training
d. Acute respiratory changes during exercise
e. Concept of training/conditioning, effects of chronic exercise/effect of training on the cardiovascular & respiratory system.
f. Body temperature regulation during exercise
g. Hormonal and metabolic effects during exercise
h. Effects of exercise on muscle strength, power, endurance
i. Fatigue assessment and management

2. Health and fitness

a) Physical fitness and its components
b) Fitness Evaluation, Analysis of Body composition,
c) Evaluation and prescription of Exercise,
d) Factors affecting exercise Performance,
e) Exercise Prescription for Specific groups : Elderly, Women and Children
f) Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.
g) Exercise & Fitness training for physically challenged individuals (subjects with poliomyelitis, musculo skeletal deformities)

Recommended books.

1. Dey, A Textbook of Sports & Exercise Physiology, 2012.
2. William D. McArdle, Frank I. Katch. Exercise Physiology: Energy, Nutrition and Human Performance , 2001.
3. Scott Powers, Edward Howley. Exercise Physiology: Theory and Application to Fitness and Performance 8th Edition.
4. NASM Essentials of Personal Fitness Training, 2011, by National Academy of Sports Medicine (NASM).
5. NASM Essentials Of Personal Fitness Training (National Academy of Sports Medicine) 5th Edition

CLINICAL TRAINING - III

Duration	: 25 - 30 Months
Total Hours	: 270
Method of Assessment	: Oral, Practical

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision.

1. Physiotherapy OPD
2. General Medicine & MICU
3. General Surgery & CTS-ICU
4. Burns & Plastic Surgery
5. Orthopaedics
6. Neurology
7. Pediatrics, PICU, NICU
8. OBG
9. Oncology
10. Community –PHC
11. Prosthetic & Orthotic Unit (Artificial Limb Centre)

6th semester

PHYSIOTHERAPY IN MUSCULOSKELETAL CONDITIONS AND RHEUMATOLOGY

Subject Description: The subject serves to integrate the knowledge gained by the students in orthopedics and traumatology with skills to apply these in clinical situations of dysfunction and musculoskeletal pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

Subject Title	: MUSCUKOSKELETAL PHYSIOTHERAPY
Duration	: 31- 36 months
Total Hours	: 150 hours
Theory	: 75
Practical	: 75 Hours
Total Hours / Week	: 10 Hours
Method of Assessment	: Written, Oral, Practical

Theory: 75 hours.

1. PT assessment for Orthopedic conditions 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. Objective- on observation - body built swelling, muscle atrophy, deformities, posture and gait. On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment,bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances. 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, special tests and functional tests. Prescription of home program. Documentation of case records, and follow up. [5 Hours]

2. Fractures - PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal union, RSD, myositis ossificans, AVN, pressure sores etc. 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. [9 Hours]

3. Specific fractures and dislocations : PT assessment and management of upper limb fractures and dislocations. PT assessment and management of lower limb fractures and dislocations including pelvis. PT assessment and management spinal fractures. [6 Hours]

4. Selection and application of physiotherapeutic techniques, maneuver's, modalities for preventive, curative and rehabilitative means in all conditions. [2 Hours]

5. Principles of various schools of thought in manual therapy. (Briefly Maitland and Mc kenzie). [3 Hours]

6. Degenerative and Inflammatory conditions: PT assessment and management and home program forthe following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder. [3 Hours]

7. Infective conditions: PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis, TB spine and major joints - knee and hip. [2 Hours]

8. Define, review the postural abnormalities of spinal column, clinical features, deformities, medical and surgical management. Describe PT assessment and management and home program. [3 Hours]

9. Deformities: Review in detail the causes, signs and symptoms, radiological features, medical and surgical management. Describe the PT. assessment and management of the following conditions : Congenital : CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum. [3 Hours]

10. Cerebral palsy: Common orthopedic deformities , clinical features, complications, conservative and surgical management and home program with special emphasis on carrying techniques. PT management after surgical corrections. [2 Hours]

11. Poliomyelitis: Common deformities, conservative and surgical management. PT. assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program. [2 Hours]

12. Leprosy:PT assessment, aims, and PT management after surgical procedures such as tendon transfer both pre and post operatively. [2 Hours]

13. Amputations: Definition, levels, indications, types, PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis,

complications of amputations and its management. [3 Hours]

14. Spinal conditions: Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacro-iliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta. [5 Hours]

15. Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction. [2 Hours]

16. Osteoporosis- causes, predisposing factors, investigations and PT treatment. [1 Hour]

17. Orthopedic surgeries: 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; Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re-attachment of limbs, External fixators, Synovectomy. [4 Hours]

18. Shoulder joint : Shoulder instabilities, TOS, RSD, Impingement syndrome - conservative and Post operative PT management. Total shoulder replacement and Hemi replacement. - Post operative PT management. AC joint injuries - rehabilitation. Rotator cuff tears-conservative and surgical repair. Subacromial decompression - Post operative PT management. [3 Hours]

19. Elbow and forearm: Excision of radial head - Post operative PT management. Total elbow arthroplasty- Post operative PT management. [2 Hours]

20. Wrist and Hand: Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations - Post operative PT management. [3 Hours]

21. Hip: Joint surgeries - hemi and total hip replacement - Post operative PT management Tendonitis and bursitis. - management. [2 Hours]

22. Knee: Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries - Post operative rehabilitation.

Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome- conservative management. TKR-rehabilitation protocol. Patellar tendon ruptures and Patellectomy- rehabilitation. [5 Hours]

23. Ankle and foot: Ankle instability. Ligamentous tears- Post operative management. [1 Hour]

Practical: 75 Hours

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.

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 Treatment – O'Sullivan Schmitz

PHYSIOTHERAPY IN SPORTS AND ADVANCED MOBILIZATIONS

Subject Description: This subject follows the basic science subjects to provide the knowledge about sports conditions the therapist would encounter in their practice in the treatment of sports injuries. The objective of this course is that after 60 hours of

lectures and discussion the student will be able to demonstrate an understanding of various forms of assessment and treatment techniques in the management of sports injuries. They also will learn the specialised advanced techniques in the management of soft tissue injuries.

Subject Title	: Physiotherapy in sports and advanced mobilizations
Duration	: 31- 36 months
Total Hours	: 60 hours
Theory	: 30
Practical	: 30 Hours
Total Hours / Week	: 4 Hrs
Method of Assessment	: Written, Oral, Practical

Sports physiotherapy

1) Physical fitness.
2) Stages of soft tissue healing.
3) Treatment guidelines for soft tissue injuries- Acute, Sub acute and chronic stages. Repair of soft tissues- rupture of muscle, tendon and Ligamen.tous tears.
4) Rotator cuff injuries.
5) Subacromial bursitis.
6) Supraspinatus and Bicipital tendonitis.
7) Tennis and Golfer's elbow.
8) Dequervain's tenosynovitis.
9) Trigger and Mallet finger.
10) Wrist sprains.
11) Hamstring strains, Quadriceps contusion, TA rupture.
12) Pre-patellar bursitis
13) Collateral and Cruciate injuries of knee.
14) Meniscal injuries of knee.
15) Soft tissue injuries- prevention and rehabilitation of Lateral ligament sprain of ankle.
16) Plantar fasciitis.
17) Sports specific training techniques

Advanced soft tissue mobilisation techniques

Indication, precaution and application for following techniques.

1) Soft tissue mobilisation techniques
2) Myo facial release
3) Positional release techniques
4) Muscle energy techniques

Recommended books

1. Sports physiotherapy- Maria Zuluaga
2. Muscle Energy Techniques: A Practical Handbook for Physical Therapists, 2012 - John Gibbons
3. Muscle Energy Technique in Treating Postnatal Low Back Pain Paperback, 2015, Botla Afaf
4. Positional Release Techniques, 4th Edition ,2007, Leon Chaitow
5. Fascial Release for Structural Balance, Revised Edition, 2017, Thomas Myers.
6. Myofascial Release (Hands-on Guides for Therapists) , 2014, Ruth Duncan.
7. Soft tissue mobilization techniques, 1994, James J Spoerl
8. Spinal Manual Therapy: An Introduction to Soft Tissue Mobilization, Spinal Manipulation, Therapeutic and Home Exercises, 2009, Howard W. Makofsky.
9. Soft Tissue Mobilization Techniques, 1986, Mark Mottice.
10. An Introduction to Instrument Assisted Soft Tissue Mobilization, Ove Indergaard.

WOMEN'S HEALTH & PERIATRICS

Subject description: This subject follows the basic science subjects to provide the knowledge about general women's health conditions and geriatric population's illness & disease which they encounter in their practice. The objective of this course is that after 60 hours of lectures and discussion the student will be able to demonstrate an understanding of women's health illness and Pediatric diseases which causes disability, list the etiology, clinical features and methods of investigations and management.

Subject Title	: Women's Health and Pediatrics
Duration	: 31 – 36 Months
Total Hours	: 60
Theory / Lecture	: 4 Hours / Week
Method of Assessment	: Written

WOMENS HEALTH

SECTION-A -30Hours

1. Physiology of puberty & menstruation: Abnormalities & common problems of Menstruation
2. Physiology of pregnancy
   Development of the foetus, Normal/ Abnormal / multiple gestations,
3. Common Complications during pregnancy:
   i. Anaemia,
   ii. P I H
   iii. Eclampsia
   iv. Diabetes,
   v. Hepatitis,
   vi. TORCH infection or HIV
4. Physiology of labour
   i. Normal –Events of Ist, IInd & IIIrd Stages of labour
   ii. Complications during labour & management
   iii. Caesarean section-elective/ emergency & post operative care
5. Postnatal period
   i. Puerperium & Lactation
   ii. Complications of repeated child bearing with small gaps
   iii. Methods of contraception
6. Uro genital dysfunction
   i. Uterine prolapse –Classification & Management (Conservative / Surgical)
   ii. Cystocoele, Rectocoele, Enterocoele, Urethrocoele
7. Gynaecological Surgeries
   i. Pre and post surgical management of gynaecological surgeries
   ii. Definition, Indications and Management of the following surgical

procedures – Hysterosalphyngography, Dilatation and Curettage, Laproscopy, Colposopy, Hysterectomy.

8. Pelvic Inflammatory Diseases
    i. with special emphasis to backache due to Gynaecological / Obstetrical conditions
    ii. Incontinence – Types, Causes, Assessment and Management.

PEDIATRICS

Section B – 30 hours

General conditions

1. Problems and management of LBW infants,
2. Perinatal problems and management,
3. Congenital abnormalities and management,
4. Respiratory conditions of childhood,
5. Cerebral Palsy – causes, complications, clinical manifestations, treatment ;
6. Spina Bifida – management and treatment,
7. Epilepsies – types, diagnosis and treatment;
8. Recognizing developmental delay, common causes of delay ;
9. Orthopedic and Neuromuscular disorders in childhood, clinical features and management;
10. Sensory disorders – problems resulting from loss of vision and hearing;
11. Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child. [8 Hours]

Paediatric neurology:

12. Neural development, Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders.

    a. Cerebral palsy,
    b. Hydrocephalus,
    c. Arnold-chiari malformation,
    d. Basilar impression,
    e. Klippel-Feil syndrome,
    f. Achondroplacia,
    g. Cerebral malformations,
    h. Autism,
    i. Dandy walker syndrome and Down's syndrome.

RECOMMENDEDTEXT BOOKS

1. Text book of Gynaecology –Datta –New Central Book Agency
2. Text book of Obstetrics --Datta –New Central Book Agency
3. API- Text book of Medicine, 5th edition
4. Medicine-- P.J. Mehta
5. Principles & Practice of Medicine – Davidson

MEDICAL LAW, ETHICS & ADMINISTRATION

Subject Title Duration Total Hours Theory / Lecture	: ETHICS AND ADMINISTRATION : 25 – 36 Months : 30 : 2 Hour / Week
Method of Assessment	: Written

Medical Ethics

1. Medical ethics - Definition - Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational drug therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill- Euthanasia
7. Organ transplantation
8. Medico legal aspects of medical records – Medico legal case and type- Records and document
9. related to MLC - ownership of medical records - Confidentiality Privilege communication -
10. 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. History of physiotherapy, Ethical principles in health care, Ethical principles related to physiotherapy, Scope of practice, Enforcing standards in health profession- promoting quality care, Professional ethics in research, education and patient care delivery, Informed consent issues, Medical ethics and Economics in clinical decision- making. [3 hours]
13. Rules of professional conduct [2 hours]
14. Physiotherapy as a profession
15. Relationship with patients
16. Relationship with health care institutions
17. Relationship with colleagues and peers
18. Relationship with medical and other professional.
19. Confidentiality and Responsibility, Malpractice and negligence, Provision of services and, advertising,

20. Legal aspects: Consumer protection act, Legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action [2 hours]
21. IAP - Memorandum Of Association & Rules And Regulations [3 hours]

ADMINISTRATION AND SUPERVISION

1. Introduction: 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. [2 hours]
2. Principles of hospital administration and its applications to physiotherapy. [2 hours]
3. Planning and organization: Planning cycle, Principles of organizational charts, Resource and quality management, Planning change -innovation [2 hours]
4. Financial issues including budget and income generation [2 hours]
5. Hospital administration: Organization, Staffing, Information, Communication, Coordination, Cost of services, Monitoring and evaluation. [2 hours]
6. National health policy and health care system in India [2 hours]
7. Organization of physiotherapy department: Planning, Space, Manpower, Other basic resources. [2 hours]
8. Organizing meetings, committees, and negotiations [1 hour]
9. Personnel management: Personnel performance appraisal system, Quality care delivery from the staff [2 hours]
10. Material management [1 hour]
    Pharmacy Hospital waste
    disposal

11. Quality assurance [1hours]
    Hospital acquired infection, Quality assurance through record review and medical audit.
12. Public relations in hospital and human resource management. [1

hours] Recommended books:

1. Medical Ethics by C M Francis.
2. George V Lobo – Current Problems in Medical Ethics
3. Consumer Protection Act – 1986, Government of India, New Delhi.
4. Francis C M – Hospital Administration
5. Davies, R and Macaulay, BMC – Hospital Planning and Adminstration
6. Health Services Management, Analysis& Application , Wadsworth Publishing Company, Belmont

CLINICAL TRAINING - IV

Duration	: 31 - 36 Months
Total Hours	: 270
Method of Assessment	: Oral, Practical

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision.

1. Physiotherapy OPD
2. General Medicine & MICU
3. General Surgery & CTS-ICU
4. Burns & Plastic Surgery
5. Orthopaedics
6. Neurology
7. Pediatrics, PICU, NICU
8. OBG
9. Oncology
10. Community –PHC
11. Prosthetic & Orthotic Unit (Artificial Limb Centre)

7th semester

CLINICAL NEUROLOGY & NEUROSURGERY

Subject Description: This subject follows the basic science subjects to provide the knowledge about relevant aspects of neurology & neurosurgery. The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that after 60 hrs of lectures and discussion the student will be able to list the etiology, pathology, clinical features and treatment methods for various neurological conditions.

Subject Title	: CLINICAL NEUROLOGY & NEUROSURGERY
Duration	: 37- 42 Months
Total Hours	: 60
Theory / Lecture	: 4 Hours / Week
Method of Assessment	: Written

1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping. [1 hour]

2. Classification of neurological involvement depending on level of lesion.[1 hour]

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. [3 hours]

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. [3 hours]

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 hour]

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 hours]

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. [3 hours]

8. Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct. 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. [4

hours]

9. Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications. [3 hours]

10. Higher cortical, neuro psychological and neurobehavioral disorders: 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. Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive-compulsive disorders. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of Brain death. Etiology, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders. [3 hours]

11. Movement disorders: Definition, etiology, risk factors, pathophysilogy, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease. [3 hours]

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. [3 hours]

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 hours]

14. Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management. [3 hours]

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. [2 hours]

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 hours]

17. Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications. [2 hours]

18. Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism. [2 hours]

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. [3 hours]

20. Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, Hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, Acute idiopathic Polyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy. [2 hours]

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 & Intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, 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. [3 hours]

22. 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. [3 hours]

23. 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. [2 hours]

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

PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Subject Description: The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

Subject Title	: Physiotherapy In Neurological Conditions
Duration	: 37 – 42 Months
Total Hours	: 150
Theory	: 75 Hours
Practical	: 75 Hours
Total Hours / Week	: 10 Hrs
Method of Assessment	: Written, Oral, Practical

1. Neurological Assessment: Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, 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, Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, 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. Differential diagnosis. [10 hours]

2. Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: PNF, Rood's Sensory motor Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy. [14 hours]

3. Evaluation and Management of Brain and Spinal Cord Disorders : History, Observation, Palpation, Higher mental function, Cranial nerve examination, 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 in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual

disorders, Amyotrophic lateral sclerosis, and Multiple sclerosis. [10 hours]

4. Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders : 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 in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post Polio Syndrome [10 hours]

5. Evaluation and Management of Peripheral Nerve Injuries and Disorders : 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 in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, 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, and Pudental nerve palsy. [10 hours]

6. Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait [10 hours]

7. Pre and Post-surgical assessment and treatment following conditions - Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis , Arteriovenous malformations, and Spina bifida [9 hours]

Practical: 75 Hours

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

3. Bedside case presentations and case discussions

4. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

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

PHYSIOTHERAPY IN WOMEN'S HEALTH AND PAEDIATRICS

Subject Description: This subject follows the basic science subjects to provide the knowledge about relevant aspects of physiotherapy management in women's health & pediatric physiotherapy. The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that after 60 hours of lectures and discussion the student will be able to understand the evaluation and PT management of issues encountered in women's health and pediatric population.

Subject Title	: Physiotherapy in women's health and pediatrics

Duration	: 37- 42 Months
Total Hours	: 60
Theory	: 30
Practical	: 30
Theory / Lecture	: 4 Hours / Week
Method of Assessment	: Written/oral/practical

PHYSIOTHERAPY IN WOMEN'S HEALTH

Section-A

1. **Women's, Health :**
   i. Women's reproductive health and health care;
   ii. Prenatal musculo skeletal disorders and PT management
   iii. Exercise prescription in pre and post natal stage;
   iv. Concept, principles and organization of antenatal exercises.
   v. Diagnosis and treatment of musculoskeletal pain and dysfunction during pregnancy and post menopause;
   vi. Treatment of Incontinence and Pelvic floor dysfunction;
   vii. Physiotherapy management of postnatal complications like bladder and bowel incontinence, pelvic floor muscle weakness, depression, low back pain, etc.
   viii. Use of electrotherapy modalities in training Pelvic floor muscles.
   ix. Therapeutic electrical stimulation. & Biofeedback.
   x. Prevention and Physiotherapy intervention in Osteoporoses.
   xi. Breast cancer rehabilitation & Physiotherapy management of Lymphedema after mastectomy.
   xii. Physiotherapy intervention after gynaecological surgeries.

PHYSIOTHERAPY IN PEDIATRICS

Section-B

1) Paediatric Neurology: Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests.

2) 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,

3) List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications.

4) Physiotherapy management of children with developmental delay, Implementation of early intervention on paediatric population.

5) Neuro physiological Techniques.

   i. Concepts, Principles, Techniques, Effects of following Neuro- physiological techniques:
   ii. NDT, Vojta therapy, Sensory Integration Approach and Constraint induced movement therapy.

6) Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia.

Recommended Books

1. Obstetrics and gynaecologic physical therapy – Wilder Elnine, Churchill, Livingstone, New York 1994
2. Physiotherapy in obstetrics and gynaecology – Polden & Mantle, Jaypee Brothers, New Delhi 1994
3. Physiotherapy in pediatrics – Shepherd R. Heinmann, London, 1980 2nd edition

CLINICAL TRAINING – V

Duration	: 37 - 42 Months
Total Hours	: 270
Method of Assessment	: Oral, Practical

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision.

1. Physiotherapy OPD
2. General Medicine & MICU
3. General Surgery & CTS-ICU
4. Burns & Plastic Surgery
5. Orthopaedics
6. Neurology
7. Pediatrics, PICU, NICU
8. OBG
9. Oncology
10. Community –PHC
11. Prosthetic & Orthotic Unit (Artificial Limb Center)

8th semester

COMMUNITY MEDICINE

Subject Description: This subject follows the basic science subjects to provide the knowledge about conditions the therapist would encounter in their practice in the community. The objective of this course is that after 60 hours of lectures and discussion the student will be able to demonstrate an understanding of various aspects of health and disease list the methods of health administration, health education and disease preventive measures.

Subject Title	: COMMUNITY MEDICINE
Duration	: 43-48 Months
Total Hours	: 60
Theory	: 4 hours/ per week
Method of Assessment	: Written

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 hours]

2. Epidemiology, definition and scope. Principles of Epidemiology and Epidemiological methods: 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. [7 hours]

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 hours]

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 hours]

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 Immunisation programme, Reproductive and child health programme, National cancer control programme, National mental health programme. National diabetes control programme, National family welfare programme, National sanitation and water supply programme, Minimum needs programme [4 hours]

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 hours]

7. Preventive Medicine in Obstetrics, Pediatrics and Geriatrics: MCH problems, Antenatal, Intranatal 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 hours]

8. Nutrition and Health: Classification of foods, Nutritional profiles of principal foods, Nutritional problems in public health, Community nutrition programmes [4 hours]

9. Environment and Health: Components of environment, Water and air pollution and public health: Pollution control, Disposal of waste, Medical entomology. [3 hours]

10. Hospital waste management: Sources of hospital waste, Health hazards, Waste management [3 hours]

11. Disaster Management: Natural and man-made disasters, Disaster impact and response, Relief phase, Epidemiologic surveillance and disease control, Nutrition, Rehabilitation, Disaster preparedness [4 hours]

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 hours]

13. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill 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. [3 hours]

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 hours]

15. Geriatrics
    a. Senior citizens in India

b. NGO's and Health related Legal rights and benefits for the elderly.
c. Institutionalized & Community dwelling elders
d. Theories of Aging
e. Physiology of ageing: Musculoskeletal, neurological, Cardio respiratory, metabolic changes
f. Geriatric degenerative changes
g. Changes in Musculoskeletal system
h. Changes in Neuro-motor system
i. Changes in cardio-respiratory system.
j. Alzheimer's disease, Dementia, Parkinson's Disease, Incontinence, Iatrogenic drug reactions, etc.

Recommended books:

a) Textbook of Preventive & Social Medicine, Dr. J E Park
b) Fundamentals of Geriatric Medicine, A Case-Based Approach, Rainier P. Soriano.
c) ABC of geriatric medicine, Nicolas cooper. (Online).
d) Oxford American handbook of geriatric medicine. Samuel. (online)
e) Geriatric Medicine Survival Handbook , (revised edition), Brian Christopher (online)

COMMUNITY & GERIATRIC PHYSIOTHERAPY

Subject 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 lectures and 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.

Subject Title	: COMMUNITY & GERIATRIC PHYSIOTHERAPY
Duration	: 43 – 48 Months
Total Hours	: 150
Theory	: 90 Hours
Practical	: 60 Hours
Hours/week	: 10 hours/ week
Method of Assessment	: Written, Oral, Practical

Community Physiotherapy

1. Rehabilitation: Definition, Types [1 hour]

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 [5 hours]

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 [6 hours]

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. [10 hours]

5. Planning and management of CBR Programmes, CBR Programmed planning and management, Ownership and Governance, Decentralization and CBR, Management of CBR, Programmed sustainability, Communication and Coordination, Community participation, mobilization and awareness, CBR programme influence on promoting and developing public policies [6 hours]

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 [6 hours]

7. Disability Evaluation: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data, Uses of evaluation findings [5 hours]

8. Role of Government in CBR: Laws, Policies, Programmes, Human Rights Policy, Present rehabilitation services, Legal aspects of rehabilitation [5 hours]

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 [4 hours]

10. Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies – 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. [4 hours]

11. National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker [5 hours]

12. Role of Physiotherapy in CBR: Screening for 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 neuromusculoskeletal and cardiothoracic disabilities. [5 hours]

13. Screening and rehabilitation of pediatric disorders in the community: Early detection of high risk babies, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc., Prevention and rehabilitation of mental retardation and Behavioral disorders, Immunization programmes, Early intervention in high risk babies, Genetic counseling [5 hours]

14. Extension services and mobile units: Introduction, Need, Camp approach [2 hours]

15. Vocational training in rehabilitation: Introduction, Need, Vocational evaluation, Vocational rehabilitation services [2 hours]

PREVENTION- PHYSIOTHERAPY ROLE

16. Industrial Health & Ergonomics [10 hours] - Occupational Hazards in the industrial area -- Accidents due to

1. Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation,
2. Chemical agents-Inhalation, local action, ingestion,
3. Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & 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.
7. 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.
8. Biological Hazards

17. Lifestyle disorders:

Physiotherapy role in planning, execution of lifestyle diseases like hypertension, obesity and diabetes mellitus. Role in developing awareness programs.

18. Geriatrics Physiotherapy

1) Screening for health and fitness in geriatric population in community and old age homes.
2) Scales used in geriatric screening
3) Physiotherapy for aging Process (physiological changes due to aging)
4) Physiotherapy for degenerative changes-Musculoskeletal /Neuromotor /cardio – respiratory conditions
5) Role of Physiotherapy in Hospital based care, Half-way homes, Residential homes, Home for the aged,
6) Institution based Geriatric Rehabilitation.
7) Physiotherapy for conditions like - Alzheimer's disease, Dementia, Parkinson's disease, Incontinence, Iatrogenic drug reactions, etc.
8) Ethics of Geriatric Rehabilitation. [9 hours]

Practical: 60 Hours

This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages,

Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio-respiratory, pediatric,

gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

Recommended books:

1. Rehabilitation Medicine by Howard A Rusk.
2. Rehabilitation Medicine by Joel A De lisa
3. Principles of Geriatric Physiotherapy, 2008, Multani

PROSTHETIC AND ORTHOTICS

Subject Description: This subject follows the requirement to provide the knowledge about use and need of prosthetics and orthotics in various medical conditions and physically challenged population. The objective of this course is that after 30 hrs of lectures and discussion the student will be able to demonstrate an understanding of

various types of prosthetics and orthotics, indications, selection and method of application for the medical population who required it and training them for independent mobility.

Subject Title	: Prosthetic and Orthotics
Duration	: 43-48 Months
Total Hours	: 30 hours
Theory	: 20 hours
Practical	: 10 hours
Hours/week	: 2 hours/ week
Method of Assessment	: Written

1. **Introduction:**

a) Classification of orthoses and prostheses;
b) Biomechanical principles of orthotic and prosthetic application;
c) Psychological aspects of orthotic and prosthetic application;

2. **Prosthetic Devices**

a) Describe types of artificial limbs and their functions. Demonstrate methods of training in their use.
b) Designing of upper extremity and lower extremity prostheses, indications and check out;
c) checking out prosthesis
d) Pre and post prosthetic training for upper and lower extremity

3. **Orthotic devices**

a) Explain the principles involved in prescribing orthotic devices for different parts of the Body.
b) List major indications and contraindication

c) Designing of upper extremity, lower extremity and spinal orthotics, indications and check out;
d) Outline the purpose of each type.
e) Demonstrate methods of training in their use;
f) Prescription and designing of footwear and modifications;

4. Mobility Aids

a) Explain about the various types of mobility aids and their functions.
b) Designing and construction of adaptive devises.
c) Wheelchair, walker, crutch, cane.

Recommended books:

1. Short Textbook of Prosthetics and Orthotics, 2010, Chinnathurai.
2. AAOS Atlas of Orthoses and Assistive Devices.2008. Hsu.
3. Orthotics and Prosthetics in Rehabilitation.2012. Lusardi.

CLINICAL TRAINING – VI

Duration	: 43 - 48 Months
Total Hours	: 270
Method of Assessment	: Oral, Practical

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU
7. Developmental Pediatrics & Child Guidance Clinic
8. OBG
9. Oncology
10. Geriatric – Old Age Homes
11. Industrial Visits - Ergonomics

AECC

ABILITY ENHANCENENT COMPULSORY COURES

Curriculum for Ability Enhancement Course

1.1. English Basics 1st semester

LEARNING OBJECTIVE:

This course is designed to build spoken and written English competency of the students needed to function effectively in academic setup.

LEARNING OUTCOME:

This course is designed to help the students to

1. Speak and write grammatically correct sentences in English.
2. Develop effective writing skills and Build fluency in English

Subject Title	: ENGLISH BASICS
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

UNIT : I GRAMMAR

1. Remedial Grammar : Parts of speech; Types of sentences, question tags
2. Modal verbs;
3. Tenses
4. Concordance

UNIT : II VOCABULARY

1. Word formation – prefixes and suffixes
2. Medical terminology
3. Words often misused or confused
4. Idioms and phrases

UNIT : III WRITING SKILLS

1. Letter writing - permission, leave and other official letters
2. Note making methods
3. Jumbled sentences – cohesion
4. Paragraph Writing

UNIT : IV SPOKEN COMMUNICATION

1. Pronunciation of commonly mispronounced words
2. Day to day conversation
3. Telephonic conversations
4. Group Discussions

UNIT : V LISTENING AND READING SKILLS

1. General Listening and reading comprehension

Textbook Recommended:

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw – Hill Publishing Company Limited, New Delhi. (Approx. Cost Rs. 200)

2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers. (Approx. Cost Rs. 150)

References:

1. High School English Grammar and Composition by Wren & Martin.
2. J. C. Nesfield, English Grammar Composition & Usage, Macmillan India Limited.

3. Practical English Usage, Michael Swan

4. Speak in English, Lakshminarayanan.K.R

5. A handbook of pronunciation of English words, J. Sethi and J.V. Jindal, Eastern Economy Edition.

6. Practical Communication By Abraham Benjamin Samuel

Online sources:

i. http://www.letterwritingguide.com/

ii. http://www.englishchick.com/grammar/

2. English and communication skills 2nd semester

LEARNING OBJECTIVE:

I. This course is designed to build spoken and written English competency of the students needed to function effectively in academic setup and clinical setup.

II. This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

LEARNING OUTCOME: This course is designed to help the students to

I. Speak and write grammatically correct sentences in English.

II. Develop effective writing skills needed for clinical task.

III. Build fluency in English needed for clinical tasks.

IV. Foster healthy attitude.

V. Develop effective inter and intra personal skills to be an effective team worker.

VI. Communicate effectively in both academic and professional setup

Subject Title	: ENGLISH AND COMMUNICATION SKILLS
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

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.

PART A:

UNIT : I APPLIED GRAMMAR (10 Hrs.)

1. Identifying errors in sentences - word order, tenses, Prepositions

2. Transformation of sentences : Reported , Voice

3. USAGE : Either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…

UNIT : II VOCABULARY (3 Hrs.)

1. Abbreviations in Medical field

2. Medical idioms & Phrases

UNIT : III WRITING (6 Hrs)

1. Letter writing - Letter to the editor

2. Curriculum Vitae, covering letter

3. Creative writing – invite, posters

4. Essay writing

UNIT: IV SPOKEN COMMUNICATION (8Hrs)

1. Telephone etiquette

2. Importance of Stress, Intonation and rhythm

3. Speaking:

- Describing simple process

- Filling a form etc., - Asking and answering questions

-Debate/Oral Reporting

UNIT : V LISTENING AND READING SKILLS: (3Hrs)

Listening and reading comprehension exercises.

UNIT: I ASPECTS OF COMMUNICATION (4 hrs)

1. Importance of communication, Process, Barriers
2. Non-verbal Communication

UNIT: II SPEAKING (8 hrs)

1. Opening and Closing conversations
2. Introductions and Address Systems
3. Expressing Courtesy
4. Giving Compliments and replying to Compliments
5. Presentation Skills
6. Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING (4 hrs)

1. White washing the Fence – Episode from Tom Sawyer by Mark Twain
2. Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING (7 hrs)

1. Letter writing - Letter of Complaints, Inviting and Declining an invitation
2. Memos and Email
3. Editing- Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS (7hrs.)

1. Active Listening Skills
2. Assertive Skills
3. Negotiation and Persuasive Skills
4. Interview Skills

PART B:

Unit 1. Introduction: Theory of Communication, Types and modes of Communication

Unit 2. Language of Communication:

1. Verbal and Non-verbal,
2. (Spoken and Written)
3. Personal, Social and Business
4. Barriers and Strategies
5. Intra-personal, Inter-personal and Group communication

UNIT 3. Speaking Skills:

1. Monologue
2. Dialogue
3. Group Discussion
4. Effective Communication/ Mis- Communication
5. Interview
6. Public Speech

UNIT 4. Reading and Understanding

1. Close Reading
2. Comprehension
3. Summary Paraphrasing
4. Analysis and Interpretation
5. Translation(from Indian language to English and vice-versa)
6. Literary/Knowledge Texts

UNIT 5. Writing Skills

1. Documenting
2. Report Writing
3. Making notes
4. Letter writing

PART C:

UNIT: I ASPECTS OF COMMUNICATION (4 hrs)

1. Importance of communication, Process, Barriers
2. Non-verbal Communication

UNIT: II SPEAKING (8 hrs)

1. Opening and Closing conversations
2. Introductions and Address Systems
3. Expressing Courtesy
4. Giving Compliments and replying to Compliments
5. Presentation Skills
6. Telephonic conversation and telephone etiquette

UNIT – III PRESCRIBED READING (4 hrs)

1. White washing the Fence – Episode from Tom Sawyer by Mark Twain
2. Bacon‘s Essays: - Of Goodness and goodness of nature

UNIT – IV WRITING (7 hrs)

1. Letter writing - Letter of Complaints, Inviting and Declining an invitation
2. Memos and Email
3. Editing- Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

UNIT – V SOFT SKILLS (7hrs.)

1. Active Listening Skills
2. Assertive Skills
3. Negotiation and Persuasive Skills
4. Interview Skills

Textbook Recommended:

i. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw – Hill Publishing Company Limited, New Delhi. (Approx. Cost Rs. 200)

ii. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers. (Approx. Cost Rs. 150)

iii. Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan.

References:

i. High School English Grammar and Composition by Wren & Martin.

ii. J. C. Nesfield, English Grammar Composition & Usage, Macmillan India Limited.

iii. English for Nurses by Sharma Lohumi, Elsevier India Pvt. Ltd.

iv. Professional English for Medicine, Eric H. Glendinning Ron Howard, Cambridge Publication.

v. Career English for Nurses by Selva Rose, Orient Black Swan.

vi. Malcolm Goodale, Professional Presentations, Cambridge University Press.

vii. Practical Communication By Abraham Benjamin Samuel.

viii. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.

Online sources:

I. http://www.letterwritingguide.com/
II. http://www.englishchick.com/grammar/

3. Environmental studies 3rd Semester

Course description

This course has been designed on the study of the natural world and how it is influenced by people. It will emphasize the need of increasing awareness of the consequences of environmental degradation and human population growth, together with the need to conserve biodiversity. This course is to train students in a multidisciplinary environmental concepts drawing from various basic and applied disciplines.

Learning objectives

This course will enable students -

a. To anticipate, identify, assess, and manage green environment and its probable ways occupational settings.

b. To integrate and apply knowledge from the appropriate areas of basic science, economics, and policy to address problems caused by ecosystem degradation and from physical alteration of the environment and chemical contaminants from industrial activities, agriculture, food production, and inadequate resource management

c. To participate in outreach activities including environmental applications and problem solving in off-campus community settings.

Subject Title	: ENVIRONMENTAL STUDIES
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

Unit 1 : Introduction to environmental studies

I. Multidisciplinary nature of environmental studies;

II. Scope and importance; Concept of sustainability and sustainable development. (2 lectures)

Unit 2 : Ecosystems

I. What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems :

a) Forest ecosystem

b) Grassland ecosystem

c) Desert ecosystem

d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) (6 lectures)

Unit 3 : Natural Resources : Renewable and Non---renewable Resources

I. Land resources and land use change; Land degradation, soil erosion and desertification.

II. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.

III. Water: Use and over---exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter---state).

IV. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies. (8 lectures)

Unit 4 : Biodiversity and Conservation

i. Levels of biological diversity : genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots

ii. India as a mega---biodiversity nation; Endangered and endemic species of India

iii. Threats to biodiversity: Habitat loss, poaching of wildlife, man---wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

iv. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value. (8 lectures)

Unit 5 : Environmental Pollution

I. Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution

II. Nuclear hazards and human health risks

III. Solid waste management: Control measures of urban and industrial waste.

IV. Pollution case studies.(8 lectures)

Unit 6 : Environmental Policies & Practices

I. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture

II. Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).

III. Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context. (7 lectures)

Unit 7 : Human Communities and the Environment

i. Human population growth: Impacts on environment, human health and welfare.

ii. Resettlement and rehabilitation of project affected persons; case studies.

iii. Disaster management: floods, earthquake, cyclones and landslides.

iv. Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.

v. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.

vi. Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi). (6 lectures)

Unit 8 : Field work

i. Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.

ii. Visit to a local polluted site---Urban/Rural/Industrial/Agricultural.

iii. Study of common plants, insects, birds and basic principles of identification.

iv. Study of simple ecosystems---pond, river, Delhi Ridge, etc. (Equal to 5 lectures)

Text Books

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.

2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad –380 013, India, Email:mapin@icenet.net (R)

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.

Reference Books

1. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)

2. Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.

3. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.

4. Mckinney, M.L. & School, R.M. 1996. Environmental Science Systems & Solutions,

Web enhanced edition. 639p.

5. Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)

6. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)

7. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut

8. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science

9. Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)

10. Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)

11. Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

Online resources

1. http://snre.umich.edu/degrees/masters/environmental_policy/overview?gclid=CPjQ_Iz iicUCFQURjgodVmEAKg

2. http://www.prospects.ac.uk/options_environmental_science.htm

3. http://study.com/academy/lesson/what-is-environmental-science-definition-and-scope-of-the-field.html

Curriculum for Skill Enhancement Course

Basics in Computer Applications 4th Semester

Learning objectives:

To familiarize with basic concepts of computer and developer tools
To familiarize with internet concepts, office packages and various advancements in networking.
To incorporate computing concepts and its application in their core domain of expertise

Learning outcome:

Be able to identify computer hardware and peripheral devices
Be familiar with software applications

Subject Title	: BASICS IN COMPUTER APPLICATIONS
Theory / Lecture	: 3 Hours / Week
Method of Assessment	: Written

UNIT I - Introduction to Computer
Importance of computer – characteristics of computer - history of computer – generations of computer - types of computer.

UNIT II - Hardware
Information processing cycle – peripheral - input devices – memory unit – types of memory - output devices – external storage devices – Communication devices - Networks – types of networks – Internet – email.

UNIT III - Software

Types of software – programming languages – execution modes - Windows - File system - – Graphical applications

UNIT IV - Office Packages

MS word- MS Power point – MS Excel - MS Access – MS Publisher.

UNIT V - Advance Network Technologies

Telemedicine – Multimedia Technology – Image Processing – Computerized data processing – HTML. Recent Advances relevant to the core -course

Reference Books

1. Introduction to computers & Data processing – Shelly, Gray. B
2. Information Technology – Dennis P Curtin
3. An Introduction to Computer Applications in medicine – N.F. Kember
4. Mastering Microsoft office 2007 – Alison Balter‘s

2. Diagnostic Imaging for Physiotherapist 5th Semester

SUBJECT DESCRIPTION:

This course covers the study of common diagnostic and therapeutic imaging tests. At the end of the course students will be aware of the indications and implications of commonly used diagnostic imaging tests as they pertain to patient's management. The course will cover that how X-Ray, CT, MRI, Ultrasound and Other Medical Images are created and how they help the health professionals to save lives.

Subject Title	: DIAGNOSTIC IMAGING FOR PHYSIOTHERAPIST
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

IMAGE INTERPRETATION

a. History
b. A New Kind of Ray
c. How a Medical Image Helps
d. What Imaging Studies Reveal
e. Radiography(x-rays)
f. Fluoroscopy
g. Computed Tomography (CT)
h. Magnetic Resonance Imaging (MRI)
i. Ultrasound
j. Endoscopy.

RADIOGRAPHY AND MAMMOGRAPHY

a. Equipment components
b. Procedures for Radiography & Mammography
c. Benefits versus Risks and Costs
d. Indications and contraindications.

FLUOROSCOPY

a. What is Fluoroscopy?
b. Equipment used for fluoroscopy
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Fluoroscopy
f. Benefits versus Risks and Costs.

COMPUTED TOMOGRAPHY (CT)

a. What is Computed Tomography?
b. Equipment used for Computed Tomography
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Computed Tomography
f. Benefits versus Risks and Costs.

MAGNETIC RESONANCE IMAGING (MRI)

a. What is MRI?
b. Equipment used for MRI
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in MRI
f. Benefits versus Risks and Costs
g. Functional MRI.

ULTRASOUND

a. What is Ultrasound?
b. Equipment used for Ultrasound
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Ultrasound
f. Benefits versus Risks and Costs.

ENDOSCOPY

a. What is Endoscopy?
b. Equipment used for Endoscopy
c. Indications and Contra indications
d. How it helps in diagnosis
e. The Findings in Endoscopy
f. Benefits versus Risks and Costs.

NUCLEAR MEDICINE

a. What is Nuclear Medicine?
b. Equipment used for Nuclear Medicine
c. Indications and Contra indications
d. How it helps in diagnosis.
e. Benefits versus Risks and Costs

3.ERGONOMICS 6th Semester

This course aims to:

Provide a broad based introduction to ergonomic principles and their application in the design of work, equipment and the workplace. Consideration is given to musculo-skeletal disorders, manual handling, and ergonomic aspects of the environment as well as to the social and legal aspects.

Learning Outcomes

On completing this course successfully the student will be able to:

- Apply Ergonomic Principles To The Creation Of Safer, Healthier And More Efficient And Effective Activities In The Workplace;
- Conduct Ergonomic Risk Assessments;
- Develop Appropriate Control Measures For Ergonomic Risk Factors;
- Describe Work-Related Causes Of Musculo-Skeletal Disorders;
- Design A Workplace According To Good Ergonomic Principles;
- Assess Ergonomic Aspects Of The Working Environment And Work Organisation.

Subject Title	: ERGONOMICS
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

1. Overview of Ergonomics

Introduction to ergonomics and its scope in relation to work. Outline of the disciplines of anatomy, physiology and psychology, with respect to ergonomics building blocks such as anthropometry and biomechanics.

1.1General Principles
1.1.1 Aims, objectives and benefits of ergonomics
1.1.2 Definition and scope of ergonomics and systems of work
1.1.3 The role of the ergonomist
1.1.4 Fitting the job to the person and the person to the job
1.1.5 Human characteristics, capabilities and limitations
1.1.6 Human error
1.1.7 Teamwork and ageing
1.1.8 Interfaces between job, person and environment
1.1.9 Human computer interaction

1.2 Biological Ergonomics
1.2.1 Body systems - musculo-skeletal and nervous
1.2.2 Anatomy, static and dynamic anthropometry
1.2.3 Biomechanics

1.2.4 Applying work physiology - body metabolism, work capacity and fatigue
1.2.5 Static and dynamic postures

1.3 Psychology

1.3.1 Perception of risk
1.3.2 Motivation and behaviour
1.3.3 Memory
1.3.4 Signal Detection Theory and vigilance
1.3.5 'Work 'Stress' - causes, preventative and protective measures
1.3.6 Work organisation - shift working and overtime

1.4 Developing an Ergonomics Strategy at Work

1.4.1 Culture of an organisation - commitment and decision-making
1.4.2 'Macro-ergonomics' and participatory ergonomic teams
1.4.3 Ergonomics at the design stage
1.4.4 Developing ergonomics, professional ergonomists and competence

2 Ergonomics Methods and Techniques

Observational experimental methods are identified which can be used for investigation, so that work, equipment and planned systems can be improved for human use.
2.1 Work Design
2.1.1 Task analysis and allocation of functions
2.1.2 User trials
2.1.3 Problem solving - scientific method

2.2 Ergonomics Risk Assessment

2.2.1 Definitions of hazard and risk
2.2.2 Priorities
2.2.3 Risk evaluation quantity and quality of risk
2.2.4 Assessment systems
2.2.5 Overall ergonomics approach
2.2.6 Control measures monitoring and feedback

2.3 Measurements and Information Gathering

2.3.1 Ergonomics standards
2.3.2 Observational techniques
2.3.3 Rating scales, questionnaires and check lists
2.3.4 Use of models and simulation

4.SWALLOWING THERAPY 7th Semester

COURSE DESCRIPTION:

Anatomy and functional components of a normal swallow and the development of normal oral motor skills for deglutition leading to the dysfunctions of swallowing. Recognize the impact of childhood developmental and/or acquired disorders of swallowing. Review of current research related to assessment and treatment efficacy. Discussions the ethical considerations related to Dysphagia including autonomy, patient right privacy and palliative care and hospice.

OUTCOMES AND COMPETENCIES

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

- Be knowledgeable of the anatomy and physiology of normal and dysfunctional deglutition.
- Understand childhood developmental and/or acquired disorders of swallowing
- Identify clinical and instrumental assessment tools including Bedside clinical eval,
- Become familiar with treatment approaches for Dysphagia including the use of compensatory strategies, E-Stim and oral motor exercises.
- Recognition of the role of the Speech/Language Pathologist as a member of the Dysphagia treatment team including professional responsibilities, ethical considerations.
- Speech-Language Pathology Knowledge and Skills

Subject Title	: SWALLOWING THERAPY
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

1. Basic Communication and Swallowing Processes

Biological, neurological, acoustic, psychological, developmental, and linguistic and cultural basis

2. Speech, Language, Hearing, Communication, and Swallowing Disorders and Differences

Swallowing (oral, pharyngeal, esophageal, and related functions, including oral function for feeding; orofacial myofunction) (including etiologies, characteristics, and anatomical physiological, acoustic, psychological, developmental, linguistic, and cultural correlates)

3. Standards of ethical conduct

4. Contemporary professional issues

5. Principles and Methods of Prevention, Assessment, and Intervention

Principles and methods of prevention, assessment, and intervention for people with communication and swallowing disorders across the life span, including consideration of anatomical physiological, psychological, developmental, linguistic, and cultural correlates of the disorders

6.General Program Standards

- Working with Diverse Populations

7. Speech-Language Pathology Standards

a. Anatomy, Physiology and Neurology of the Swallowing mechanism
b. Swallowing Disorders
c. Assessment of Swallowing Disorders
d. Management of Swallowing Disorders

RECOMMENDED TEXT:

Groher, Michael E. (1997). Dysphagia Diagnosis and Management (3rd ed) Butterworth Heinmann

5. ELECTRO PHYSIOLOGY AND DIAGNOSIS 8th Semester

Course Objectives:

At the end of the course, the student shall be able to acquire requisite comprehensive knowledge and skills in the subject of electro diagnosis and nerve conduction studies. Candidate shall also able to identify the neuromuscular diseases, relevant EMG features and able to compare the

prognosis with electrophysiological readings.

Subject Title	: ELECTRO PHYSIOLOGY AND DIAGNOSIS
Theory / Lecture	: 2 Hours / Week
Method of Assessment	: Written

Electro-diagnosis:

a. Neurophysiology of Nerve conduction studies and Electromyography.
b. EMG: Construction of EMG equipment and Instrumentation of Electrical stimulator, EMG, SFEMG, NCS (Nerve Conduction Studies).
c. Electrical study of reflexes (H- reflex, Axon reflex, F- response, Blink reflex, Jaw jerk, Tonic Vibration Reflex).
d. Repetitive nerve stimulation.
e. Nerve conduction velocity studies
f. Bio-feed back
g. Evoked potentials (SSEP, MEP, BAERA, and VER).
h. Interpretation of neurophysiologic responses in Neuropathy, myopathy and neuro-muscular disorders

DSEC/ECC

DISCIPLINE SPECIFIC ELECTIVE COURSE/ GENERIC ELECTIVE COURSE

Curriculum for Discipline Specific Elective Course/Generic Elective Course

1.Introduction to Physiotherapy & Rehabilitation 1st semester

The course provides the students a basic knowledge and features of physiotherapy and rehabilitation. Topics to be covered under the subject are as follows:

Subject Title	: Introduction to Physiotherapy & Rehabilitation
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

THEORY

1.Patterns of Health Care Delivery

a. National Trends and resources
b. Local trends and resources
c. Overview of Health Science Professions

2.Components of Physiotherapy Profession

a. History of Medical Therapeutics
b. Introduction and history of Physiotherapy
c. History of Physiotherapy
d. Overview of Health Science Professions

3.Role of Physiotherapy in meeting Health Care Needs in India.

a. Needs versus Demands
b. Physiotherapist as 'Educator'
c. Typical Job settings
d. Common problems and solutions

4.Rehabilitation

a. Introduction to rehabilitation, Definition of Rehabilitation, Principles of rehabilitation, its aim & objectives.
b. Concept of disability (including mental illness), definitions and classification.
c. Difference between incidence and prevalence, Prevalence and incidence of disability
d. History of disability rehabilitation, Introduction to locomotor disability, disability and general medical conditions.
e. Global, National, State and Local legislations concerning disability and development, Poverty, disability and developmental programs.
f. Schemes & concessions for persons with disabilities, Advocacy and rights of persons with disabilities.
g. Role of community in the prevention of disabilities

2. Introduction to National Healthcare System 1st Semester

The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world. Topics to be covered under the subject are as follows:

Subject Title	: Introduction to health care system
Total Hours / Week	: 2 Hours
Method of Assessment	: Written, Oral, Practical

1.Introduction to healthcare delivery system

a. Healthcare delivery system in India at primary, secondary and tertiary care
b. Community participation in healthcare delivery system
c. Health system in developed countries.
d. Private Sector
e. National Health Mission
f. National Health Policy
g. Issues in Health Care Delivery System in India

2. National Health Programme Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Programme.

3.Health scenario of India- past, present and future

4.Demography & Vital Statistics.

Demography – its concept , f. Vital events of life & its impact on demography , g. Significance and recording of vital statistics , h. Census & its impact on health policy

5.Epidemiology

i. Principles of Epidemiology, j. Natural History of disease, k. Methods of Epidemiological studies, l. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

3. Kannada 1st Semester

Subject Title	: KANNADA
Lecture	: 2 Hours / Week
Method of Assessment	: Written, Oral

ಕನ್ನಡ : ಒಂದು
ಪಠ್ಯಕ್ರಮದ ರೂಪರೇಖೆ

ಸ್ಥಾನ : ಬೇಸಿಕ್ ಬಿ.ಎಸ್ಸಿ. (ನರ್ಸಿಂಗ್) ಮೊದಲ ವರ್ಷ

ಸಮಯ : 15 ಘಂಟೆಗಳು. (ವಾರಕ್ಕೆ ಎರಡು ಘಂಟೆಗಳು)

ಪಠ್ಯಕ್ರಮದ : ವಿದ್ಯಾರ್ಥಿ/ವಿದ್ಯಾರ್ಥಿನಿಯರು ದಿನನಿತ್ಯ ಸಂಪರ್ಕಿಸಬಹುದಾದ ಜನಸಾಮಾನ್ಯರೊಡನೆ ಶುಶ್ರೂಷೆಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಕನ್ನಡದಲ್ಲಿ ಸಂಭಾಷಣೆ ಮಾಡಲು ಹಾಗೂ ತಿಳುವಳಿಕೆ ನೀಡಲು ಸಹಕಾರ ವಾಗುವಂತೆ ಪಠ್ಯಕ್ರಮದ ಮಾದರಿಯನ್ನು ಅಳವಡಿಸುವುದು.

ಉದ್ದೇಶ : 1. ದಿನ ಬಳಕೆಯ ವ್ಯವಹಾರದಲ್ಲಿ ಶುಶ್ರೂಷೆಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಕನ್ನಡ ಭಾಷೆಗೆ ಅಳವಡಿಕೆ

2. ಕನ್ನಡೇತರರಿಗೆ ಕನ್ನಡ ಭಾಷೆಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

ಪಠ್ಯಕ್ರಮದ ವಿವರ

ಘಟಕ ಒಂದು : (ಅ) ಅಕ್ಷರಮಾಲೆ. ಸ್ವರಗಳು. ವ್ಯಂಜನಗಳು
(ಆ) ಪದ. ಪದಾಂತರಜ. ವಾಕ್ಯ ರಚನೆ. ಪತ್ರಲೇಖನ ಪ್ರಬಂಧರಚನೆ

ಎರಡು : ಶುಶ್ರೂಷಾ ಪದಗಳು (ಇಂಗ್ಲೀಷಿನಿಂದ ಕನ್ನಡಕ್ಕೆ ಶುಶ್ರೂಷೆಯಲ್ಲಿ ಸಾಮಾನ್ಯ ಬಳಕೆಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ)

ಮೂರು : ರೋಗಿ ಹಾಗೂ ಶುಶ್ರೂಷಕರ ಮಧ್ಯೆ ಸಾಮಾನ್ಯವಾಗಿ ನಡೆಯುವ ಸಂಭಾಷಣೆ
(ಅ) ಪ್ರಾಥಮಿಕ ಸಲಹೆ ಕೊಡುವ ವಾಕ್ಯಗಳು
(ಆ) ವೈದ್ಯರೊಂದಿಗೆ ಹಾಗೂ ಇತರೆ ಸಹಚರರೊಂದಿಗೆ ವ್ಯವಹರಿಸಲು. ಸಂಭಾಷಣೆ ನಡೆಸಲು ಬೇಕಾದ ವಾಕ್ಯಗಳು.

ಅಧ್ಯಯನಕ್ಕೆ ಶಿಫಾರಸ್ಸು ಮಾಡಲಾಗಿರುವ ಗ್ರಂಥಗಳು

1. ಕನ್ನಡ ವ್ಯಾಕರಣ (8. 9 ಮತ್ತು 10ನೇ ತರಗತಿಗಳಿಗೆ ಕರ್ನಾಟಕ ಸರ್ಕಾರ. ಪಠ್ಯಪುಸ್ತಕಗಳಲ್ಲಿರಬಹುದು)
2. ವ್ಯವಹಾರಿಕ ಕನ್ನಡ : ಎಚ್ಚೆಸ್
3. ಪತ್ರ ಲೇಖನ : ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಷತ್ತು
4. ಲೇಖನ ಕಲೆ : ಎನ್. ಪ್ರಹ್ಲಾದರಾವ್
5. ಆರೋಗ್ಯ ಮತ್ತು ಇತರೆ ಪ್ರಬಂಧಗಳು : ಡಾ॥ ಪಿ. ಎನ್. ಶಂಕರ್
6. ವೈದ್ಯ ಪದಗಳ ಹುಟ್ಟು ರಚನೆ : ಡಾ॥ ಡಿ.ಎನ್. ಶಿವಪ್ಪ

4.FIRST AID, BLS & CPR 2nd SEMESTER

Course Description: At the completion of this course the student of First Aid, BLS and CPR must be able to identify and manage situation of common emergencies.

Subject Title	: FIRST AID, BLS, & CPR
Total Hours / Week	: 3 Hours
Method of Assessment	: Written, Oral, Practical

1. First aid & Basic nursing procedures
2. Importance of First Aid in Physiotherapy.
3. Examination of Vital Signs
4. First Aid in cardiac arrest.
5. First Aid in Respiratory failure.
6. First Aid in Burns.
7. First Aid in Electric shock.
8. First Aid in Drowning.
9. First Aid in Spinal cord injuries.
10. First Aid in Hypovolemic Shock.
11. First Aid in Poisoning
12. Instrumentation used in First Aid (First Aid kit).
13. First Aid in RTA.
14. Indication of CPR.
15. Assessment and technique of CPR.
16. Artificial ventilation.
17. Training in basic life support

Recommended Textbooks

1. First aid in emergency – St-john. Ambulance Association.
2. Physiotherapy for burns & Reconstruction – Glassey.
3. Surgical & Medical Procedures for Nurses & Paramedical staff – Nathan.
4. First aid & management of general injuries & common ailments-Gupta & Gupta

5.Counselling and Guidance 2nd Semester

Learning objectives

- To understand theoretical foundations of counselling psychology
- To examine briefly the major perspectives of counselling and to apply based on the client's needs
- To assess one's own needs and motivations and personal characteristics that will help in personal growth and wellbeing.
- To understand basic counselling skills as practiced by an effective counsellor.
- To discuss special settings and populations where counselling could be effectively used.
- To explore ethical and legal issues for the practice of counselling profession.

Learning Outcome

- At the end of this course, the students will be able to:
- Demonstrate basic knowledge in counselling (concepts, theories, ethical issues, basic skills, etc.).
- Apply this knowledge in improving one's own life as well as to understand others in a better way.
- Use basic counselling skills (attending and listening skill) in improving their relationships.

Subject Title	: Counselling and Guidance
Total Hours / Week	: 2 Hours
Method of Assessment	: Written, Oral, Practical

UNIT I:

Introduction and definition of Counselling and Guidance, Counsellor Preparation, Qualifications, Qualities, Legal and Professional ethics

UNIT- II:

Different approaches to counselling, goals in counselling, role and functions of the counsellor.

UNIT- III:

Micro skills in Counselling- relationship building strategies and methods: Opening techniques, attending skills- verbal and non-verbal communication, Listening skills: Open questions and closed questions, Encouragement, Paraphrasing, Reflection, Summarization, influencing skills- Reframing, genuineness and Self-disclosure.

UNIT-IV:

Macro skills in Counselling, empathy, advanced empathy, Confrontation & challenging, Resistance, transference and counter-transference

UNIT-V: Counselling situations and Counselling across life-span.

REFERENCES

Text books:

Corey, G. (2004). Theory and Practice of Counseling and Psychotherapy (7th ed.). Wadsworth Publishing.

Gladding, S.T. (2003). Counseling: A Comprehensive Profession (5th edition.). Prentice-Hall Career & Technology.

Reference books:

1. Narayana Rao, S. (2002). Counselling and Guidance (Rev. Second Edition). Tata McGraw-Hill, New Delhi.

2. Thomas, R. Murray. (1990). Counselling and Life Span Development. Sage Publications, New Delhi.

Online Resources:

1. http://www.basic-counseling-skills.com/

2. http://www.counsellingtutor.com/basic-counselling-skills/

5.Fundamentals of Occupational Health 2nd Semester

Course Description

The primary objective of this course is to provide a comprehensive overview of major occupational and environmental risk factors that affect human health. The course will provide global and national perspectives on a range of hazards

encountered in community and workplace settings and consequent health burdens together with relevant regulatory frameworks for prevention and control of such exposures.

Learning Objectives:

- To learn about major categories of hazards (including physical, chemical, biological and psychosocial hazards) in workplaces and communities that pose health risks for exposed populations
- To gain an in-depth knowledge on common sources, routes of exposure and mechanisms for health effects for important categories of occupational and environmental hazards
- To become familiar with burden of disease methodologies for environmental and occupational risk factors
- To learn about important legislative and regulatory elements that govern the management of environmental and occupational health risks

Learning Outcomes:

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

- Recognize sources, pathways and health effects associated with major categories environmental and occupational risk factors.
- Develop an understanding of attributable health burdens from these risk factors at the global and national scales
- Become familiar with specific legal and regulatory provisions concerning environmental and occupational hazards

Subject Title	: Fundamentals of Occupational Health
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

1.The Occupation and Health Connection

- Historical perspectives
- Impact of occupational factors on health
- Link between occupation and health
- The Global agenda (ILO, WHO, Millennium Development Goals)
- The Indian agenda (Five Year Plan)
- Role of environmental and occupational health professionals

2.Overview of Occupational Health Hazards

- Overview of occupational safety and health hazards
- Overview of common occupational diseases
- Status of occupational health in the World and in India
- Medical surveillance
- Ethics and code of good practices in occupational safety and health

3.Overview of industrial hygiene and safety

- Recognition, evaluation and control of occupational hazards: Chemical, Physical, Biological, Ergonomic, Psychological
- Introduction to industrial safety: Mechanical safety, Electrical safety, Material handling, Industrial accidents

4.Global and National Environmental Burden of Disease

- Occupational risk factors
- Burden of disease attributable to major occupational risk factors
- Occupational attributable fraction by disease
- Preventing disease through healthy environments

5.Standards and Guideline for Safety and Health

- Overview of legal framework of OSH in India
- Factories Act, 1948, other important legislations:
- OSHA, EU Standards,
- ACGIH, International conventions, WHO Healthy Worker Agenda

6.Environmental acts and Guidelines

- Environment Protection Act, The National Environment Tribunal act, The National environment appellate authority act, The Public liability insurance act, US Environment Protection Act,
- Introduction to Environment Management systems
- ISO 14001, OSHAS 18001,

Text Books:

1. Environmental Health, Dade W Moeller, 3rd edition. 2005
2. Basics of Environmental Health, Annalee Yasi et al, 2001, WHO.

Reference books:

1. Occupational and Environmental Medicine, Joseph LaDou, 3rd Edition 2002
2. Environment and Occupational medicine, William N. Rom 2nd Edition. 1992
3. Occupational Health, Barry S. Levy, David H. Wegman, 4th Edition, 2000.
4. OSH for Development, By Kaj Elgstrand and Nils F. Petersson (editors)

Online Resources:

1. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?TOXLINE
2. http://toxnet.nlm.nih.gov/
3. http://www.remm.nlm.gov/
4. http://tools.niehs.nih.gov/wetp/
5. http://www.cdc.gov/niosh/topics/industries.html
6. http://www.cdc.gov/niosh/idlh/intridl4.html

7.Yoga and Its Therapeutic Applications 3rd semester

COURSE OBJECTIVES: In this course, the students will learn the principles and effects of yoga and its uses in medical conditions. They also able to explain the fundamental principles of Yoga , explain the benefits, indications and contraindications of different Asanas, pranayama, Meditation, Shatkriyas (Cleansing techniques), demonstrate basic Yoga practices (Sukhma Vyayama, Asanans, pranayama) , explain therapeutic applications of Yoga in Physiotherapy, role of Yoga in Self-management of Stress and better academic performance.

Subject Title	: Yoga and Its Therapeutic Applications
Total Hours / Week	: 3 Hours
Method of Assessment	: Written, Oral, Practical

Theory 20 Hours

1. Basic Principles of Yoga
2. Introduction and Definitions of Yoga,
3. Four paths of Yoga
4. Astanga Yoga
5. Hatha Yoga vs Astanga Yoga
6. Understanding different dimensions of Health
7. Concept of Mind / Indriyas
8. Concept of Stress – Eastern and Western
9. Psychosomatic Diseases – Eastern Philosophy and HPA Axis
10. Therapeutic Application of Yoga
11. Concept of Pancha Kosa / IAYT
12. Concept of Health, body and Disease
13. Asana vs Exercises & Shadkriyas (Cleansing Techniques)
14. Concept of Prana and Pranayama
15. Meditation/ Guided Relaxations
16. Yogic Principles and Practices of Healthy Living
17. Role of Yoga in Common/ Psychosomatic Ailments
18. Role of Yoga for Musculoskeletal Disorders
19. Role of Yoga for Neurological Disorders
20. Role of Yoga for Respiratory Disorders
21. Role of Yoga for Psychiatric Disorders
22. Scope of research in Yoga Therapy

Practical's 25 hours

1. Sukhma Vyayama (Loosening Exercises)
2. Suryanamaskar
3. Standing Postures:
   Padahastasana, Padangusthasana, Uttanasana, Utkatasana, Tadasana
4. Sitting Postures:
   Padmasana, siddhasana, sukhasana, Yogamudrasana, Virasana, Gomukhasana, Pashchimottansana, Ardha matsyendrasana, Ardha matsyendrasana
5. Supine Postures:
   Pawanamuktasana, Ardha Halasana, Halasana, Setubandhasana, Naukasana, Matsyasana, Shavasana, sarvangasana, Urdhva dhanurasana, Viparitakarani
6. Prone Postures :
   Bhujangasana, Ardha- shalabhasana, Dhanurasana, Makarasana
7. Pranayama – Sectional Breathing, Nadishuddi, Bramari, Kaphalabhati

8. Shadkriya – Neti, LSP
9. IYTM for Promotion of Health
10. IYTM for Musculoskeletal Disorders
11. IYTM for Neurological Disorders
12. IYTM for Respiratory Disorders
13. IYTM for Psychiatric Disorders

RECOMMENDED TEXTBOOKS

1. PPH – Dr Nagendra and Dr R Nagaratna, SVYP Publications
2. The Science of Yoga – I K Taimini
3. Lights on Pranayama – BKS Iyengar
4. Yoga for Common Ailments series - Dr Nagendra and Dr R Nagaratna
5. Yoga Nidra – Swami Satyananda Saraswathi
6. Four Paths of Yoga – Swami Vivekananda

8. Personality Development and Stress Management 3rd Semester

Learning Objectives

- To give a better understanding about yourself and those around you.
- To understand the concept of personality and its theories.
- Factors influencing personality development; nature vs nurture.
- Personality traits and types.
- Understanding the relationship between personality, stress and coping
- Coping with health stress
- Importance of soft skills in personality
- Various aspects of soft skills

Learning Outcome:

By successfully completing this course, students will be able to: Describe how a personality develops.

- Define the stages of personality development.

- Define personality types.
- Describe basic personality traits.
- Personality and stress.
- Health stress, coping and relaxation.
- Soft skills and personality.

Subject Title	: Personality Development and Stress Management
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

Unit 1
Introduction to Personality Development, Developing Personality, Stages of Development, Types of personality, Theories of personality

Unit 2
How needs impact personality, Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.

Unit 3
Stress; causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.

Unit 4
Health stress and coping, Understanding and communicating our health needs, Behavioral and psychological correlates of illness.

Unit 5
Soft skill; need and importance, Personality development and soft skills. Effective communication, listening, speaking, writing, interpretation part of soft skills and personality

Text Books:

Hurlock (1976). Personality development. Tata McGraw Hill.
Baron R A, Psychology 5th edition, Pearsons publication.
Abraham A, General Psychology, Tata Mc Graw hill Education private limited.

Reference Books:

Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited.
Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi.

Online Resources:

1. **Role of soft skills and personality development**
   http://resjournals.com/ERJ/Pdf/2012/Feb/Kushwaha.pdf

2. **Soft skill module, Effective communication, listening, speaking, writing, interpretation**

   http://profitt.gatech.edu/drupal/sites/default/files/curriculum/Soft%20Skills%20Track/Soft%20Skills%20Module%2005%20Communication/Soft%20Skills%20Module%205%20Commu nication.pdf

3. **Personality development**

   http://abesit.in/wp-content/uploads/2014/05/article-personality-development.pdf

9. Team Building & Leadership 3rd Semester

Objectives

To help the students understand process of team development, factors affecting team performance and managing them effectively.
To expose the students to Leadership traits, styles and influencing team members.
To make them aware about role of leadership in change management

Learning Outcome

Students will be equipped with the ideas to make the team an integral part of an organization and framework of leadership in managing them effectively.

Subject Title	: Team Building & Leadership
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

Unit I : Nature of Team – Team development process – stages of team development –Types of Team - Team composition and diversity.

Unit II : Factors affecting team performance - Group dynamics – complexities of cooperative work – promoting effective team work.

Unit III : Conflict management – Group think – Managing Team – Team member – Team leader – Leadership Grid - Leadership styles –Motivating team members - Essence of motivation.

Unit IV : Leadership Traits - Character and integrity – Influencing Team - Ethics and Values- Building excellence - Emotional intelligence - Laws of leadership.

Unit V : Coaching and Mentoring – Working with power and politics – Leadership and diversity- change- - organization.

Text Books

1.Groups That Work (and Those That Don't): Creating Conditions for Effective Teamwork – Hackman J. R
2.Team-Work and Group Dynamics – Stewart G.L., Sims H. P., Manz C. C.
3.Effective Leadership – Robert. N.Lussier& Christopher. F. Achua.

Reference Books

1.Watson M Craig. Dynamics of leadership. Jaico Publishing House. 2001.
2.Daniel Goleman. ―Leadership that Gets Results.‖ Harvard Business Review On Point Enhanced Edition. Boston: Harvard Business School Publishing, 2000.

Web Resources

1.http://notes.tyrocity.com/chapter-8-leadership-qualities-business-studies-xii/

2.https://www.gnb.ca/0000/publications/curric/Leadership%20Through%20Physical%20Education%20and%20Recreation%20-%20Teacher%20Notes.pdf

10. Medical Physics and Electronics 4th Semester

Objectives

1.To help the students understand process of team development, factors affecting team performance and managing them effectively.
2.To expose the students to Leadership traits, styles and influencing team members.
3.To make them aware about role of leadership in change management

Subject Title	: Medical Physics and Electronics
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

1.Introductory Physics.

A. Electricity definition, types [1 Hour]
B. Static electricity [2 Hour] a. Production of electrical charges. b. Characteristics of charged body. c. Characteristics of lines of forces. d. Potential difference and EMG.

C. Current Electricity [5 Hour]

a. Units of Electricity, faraday, volt, ampere, coulomb, watt.
b. Resistance in series and parallel.
c. Ohms law and its application to DC/AC.
d. Fuse.
e. Shock: Micro/ Macro shocks, safety precaution and management, earthing techniques & precautions.
f. Burns: electrical & chemical burns, prevention and management.
g. Condensors: definition, principles, types, construction, working and uses.

D. Magnetism: Definition, properties, electro-magnetic induction, electro- magnetic spectrum. [1 Hour]

E. Valves, transformers, types, principles, construction and working. [1 Hour]

F. Ionization: Principles, effects of various technique of medical ionization. [1 Hour]

G. Basic types of current [1 Hour]

a. Direct Current: types
b. Alternating Current

Recommended Textbooks

1. Claytons Electrotherapy by Forster & Plastangs
2. Electrotherapy Explained by Low & Reed
3. Electrotherapy Evidene based practice by Sheila Kitchen
4. Physical agents by Michile Cameroon
5. Thermal agents by Susan Michlovitz.

11. Public health and hygiene 4th Semester

Subject Title	: Public health and hygiene
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

Learning objectives:
To understand the concepts, significance and relevance of public health and hygiene
To understand the health hazards as associated with public health and hygiene

Learning outcomes:
To understand public health and hygiene issues, their relevance and significance as can be practiced in real-life situations.

1. Introduction
Definition and Concept of Public Health, historical aspects, public health system in India and in the rest of world

2.**Aspects of health**
Indicators of health, Determinants of Health, (Social, Economic, Cultural, Environmental, Education, Genetics, Food and Nutrition). Burden and prevention of disease. Environmental health- sanitation, air, water pollution, waste management. Mental health.

3.Epidemology
Introduction, principles and concepts, study design, analysis methods, presentation and interpretation of epidemiological data

4.Hygiene concepts
Definition, importance, personal hygiene, medical hygiene, food hygiene, industrial hygiene.

Text Books

1. Introduction to Public Health, Raymond L. Goldsteen, Karen Goldsteen, David G. Graham, 2011, Springer publishing company
2. Introduction To Community Health Nursing, Kasturi Sundar Rao, 4th edition, Bi Publications Pvt Ltd
3. Concepts of Epidemiology, Raj S Bhopal, 2002, Oxford University press

Reference Books

1. A Treatise On Hygiene And Public Health, Birendra Nath Ghosh, 9th edition, Calcutta Scientific Publishing Co
2. An Introduction to Public Health, Caryl Thomas, 1949, John Wright and Sons Ltd.,

Web links
http://www.phfi.org/ http://health.nih.gov/

12. Infection Prevention and Control 4th semester

Aim: The program aims to impart the student's knowledge about the various practices in prevention of infection both within the Hospital and Community. The students will understand the principles of the underlying the practices and how to implement them effectively.

Learning Objectives: At the end of the Course the student should be knowledgeable about

1. How to prevent and control infections in hospitalized patients to ensure patient safety
2. How to prevent infections in employees thus assuring employee safety within the organization
3. How to prevent and control infections in the environment within the hospital and homes thus ensuring environmental safety
4. How to plan and implement an infection prevention program.

Learning Outcome : At the end of the course the student shall understand the various principles and practices of an Infection Control Program and be able to identify potential health care related infections in order to implement prevention and control measures.

Subject Title	: Infection Prevention and Control
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

Unit 1 : Overview of infectious diseases with special reference to communicable pathogens. Hand hygiene principles, practice and audit. Handling of patients with communicable diseases and the principles of isolation policies. Reporting of communicable diseases to the governmental agencies. Biomedical waste management and the current regulations.

Unit 2 : Infection prevention in Operating rooms, Casualty, Dialysis , transplant units, Burns unit. Occupational exposure to infection and management, environmental surveillance protocols.

Unit 3 : Infection control in Central Sterilization Services department, Laundry, Diet kitchen. Infection control in Intensive Care Units including prevention of Device Associated Infections.

Unit 4 : Monitoring of Antimicrobial use and audit.

Test Books :

1. Handbook Of Hospital Infection Control – Sanjay Singhal
2. Basics of Infection Control for Health Care Providers 2nd edition: Mike kennamar
3. APIC Text of Infection Control and Epidemiology, 4th ed.
4. Hospital Epidemiology and Infection Control – Glen Mayhall . 4th Edition. Lippincott Williams
5. Hospital Clinical Waste, Hazards, Management and Infection Control . Dr. Ashok Saini . Indian Society of Health Administrators. Yem Yes Printers
6. Hospital Acquired Infections – Prevention and Control , PurvaMathur, 1st Edition, Lippincott Williams

Web Resources: 1. www.cdc.gov/hai/prevent/prevention
2. www.cdc.gov/hai/prevent/prevent_pubs.

13. Lifestyle disorders 5th Semester

Learning objectives:

- To understand the relevance, significance and implications of lifestyle disorders
- To understand the various types and causes of life style disorders
- To understand the ways in which lifestyle disorders can be identified, managed and prevented

Learning outcomes:

To understand the relevance, significance and implications of lifestyle disorders for the betterment of human life quality

Subject Title	: Lifestyle Disorders
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

UNIT I

Modern Life style disorders

Deskbound and sleeping habits, junk food, anxiety. Food poisoning, Acidity.

UNIT II

Dietary disorders

Food groups and concept of a balanced diet, obesity, metabolic syndrome, hypertension- their causes and prevention through dietary and lifestyle modifications

UNIT III

Social health problems

Smoking, alcoholism, drug dependence and Aquired Immuno Deficiency Syndorme (AIDS).

UNIT IV

Gastrointestinal disorders

Stomach disorders-Gastritis, Ulcer, Amoebiasis, Constipation, piles

Common ailment- cold, cough, fevers, diarrhoea, constipation- their causes and dietary treatment

Text Books

1. Text book of Clinical Biochemistry- Carl. A.Burtis and Edward R. Ashwood
2. Text Book of Medical Biochemistry – Dr. M.N. Chatterjee and Rane Shinde

Reference Books

1. P. Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence
2. Biochemistry with Clinical Correlation- Thomas M. Devlin

Webpage link

http://www.dailydiet.in

14.Hospital Management 5th Semester

Objectives:

1. To provide orientation about the hospital functions
2. To familiarize students with the basics concepts of hospital Management
3. To give overview of hospital operations

Learning Outcomes:
Students will have an overview of hospital functions and management.

Subject Title	: Hospital Management
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

UNIT 1 –Introduction to Management
Introduction - Definition – Steps - Planning – Organizing – Staffing –Directing – Controlling

UNIT 2 – Introduction to Clinical service
Types of Hospitals - Organization and administration of various clinical services: Outpatient services – In-patient services - Emergency services - Operation theatres – Nursing services - ICU's.

UNIT 3– Hospital Support services Organization and Administration of various Support services: – CSSD –– Diet – Medical records

UNIT 4 – Hospital Ancillary Services Organization and Administration of various Ancillary services: Housekeeping – Linen and Laundry- Engineering services – Transportation

UNIT 5 – Hospital Diagnostic and Therapeutic services
Organization and Administration of various Diagnostic and Therapeutic services: Radiology - Laboratory – Pharmacy - Blood bank

UNIT 6 – Safety and Risk management
Hospital waste management – Nosocomial infection – Disaster management – Hospital security service - Occupational safety in hospitals

Text Books:
1.Principles of Management by – SakthivelMurugan, New Age International Publishers
2.Hospital Administration – DC Joshi &Mamta Joshi, Jaypee Brothers Medical Publishers (P) Ltd

Reference Books:
1. Principles of Hospital Administration and Planning – by B. M. Sakharkar, Jaypee Brothers Medical Publishers (P) Ltd
2. Total Quality Management by – V.JayaKumar, Lakshmi Publications
3. Forensic Medicine and Toxicology by – VV. Pillay, Paras Publication

Online Reference:
1. http://www.hospitals-management.com/
2. http://www.hospitalmanagement.net/

15.NGO management 5th Semester

Subject Title	: NGO Management
Total Hours / Week	: 2 Hours
Method of Assessment	: Written

NGO Management

- Understand the key strategic issues facing the NGO sector
- Analyse the organisational challenges facing international NGOs.
- The development environment and strategic trends
- NGOs: organisational types and structures
- The issues of managing NGOs in the current aid architecture
- Implications of the changing role of INGOs and civil society
- Applying NGO principles and values
- Governance and working with NGO Boards
- NGO Capacity building: trends and effectiveness
- Developing strategies and strategic plans
- Building partnerships and managing inter-organisational relations.
- Managing effective, accountable and sustainable NGOs
- NGO Leaders and Leadership Development
- NGO management competencies
- Dimensions of cross-cultural management in NGO context
- Managing People & Teams in NGOs
- OD and organisational change in NGOs
- Promoting organisational learning and innovation in NGOs
- Current issues in monitoring & evaluation.

PRINCIPLES OF NGO MANAGEMENT

- Nature of Management: The definition of Management, The Management Functions, Management types, Management Skills, Manager's role & Functions
- Organizational goal setting & planning: Overview of goals & plans, Nature & Purpose of Planning , Types of Plans , Strategies & Policies
- Overview of goals & plans , Organizing Process , organizing the vertical Structure, Organizing the lateral structure , Balancing vertical & Lateral structure
- How to get started on Fund raising , Strategies for getting started, Who to approach and Why
- Event Marketing, Need for Events, Types, Steps for planning an event , benefits of organizing events , Limitations of Events , Internet applications for fund raising

Text Books.

1. Formation and Management of NGOs: Non-governmental Organisations, Anita Abraham, Universal Law Publishing, 2011
2. Non-Governmental Organizations, Management and Development 3rd Edition by David Lewis.

16Acupuncture and Dry Needling 6th Semester

Subject Description: The subject is designed to provide knowledge in learning the alternative medicine techniques and planning interventions for various General, Medical and Surgical conditions. The student must be able to assess and plan the treatment for relevant medical conditions and select & provide appropriate interventions to the patient.

Subject Title	: Acupuncture & Dry Needling
Total Hours / Week	: 3 Hours

Method of Assessment : Written, Oral, Practical

1.History of acupuncture & Basic theory of acupuncture

Philosophy of traditional Chinese medicine, including but not limited to concepts of yin-yang and the five phases, Functions of qi, blood, mind, essence and body fluids, as well as their relationship to one another, Physiological and pathological manifestations of zang-fu (visceral organs) and their relationship to one another, Meridians and collaterals, their distribution and functions, Causes and mechanisms of illness.

2.Knowledge of acupuncture points

a. Location of the 361 classical points on the 14 meridians and the 48 extraordinary points. Location and anatomical description of the Commonly Used Points selected for Basic Training.
b. Alphanumeric codes and names, classifications of points, direction and depth of insertion of needles, actions and indications of the commonly used points listed in the Appendix.

3.Diagnosis

a. Methods of diagnosis, history taking, inspection and tongue diagnosis, palpation and pulse taking, auscultation and olfaction.
b. Differentiation of syndromes according to the eight principles, the theory of visceral manifestations (zang-fu), the theory of qi and blood, and the theory of meridians and collateral vessels.
c. Treatment (as permitted by national laws and health service regulations)

4.Principles of treatment

a. Practical application of theory and diagnosis to treatment in each individual case.
b. Appropriateness of acupuncture treatment for the patient.
c. Planning of the acupuncture treatment to be given.
d. Appropriate selection of points and methods of needle manipulation.
e. Limitations of acupuncture, and need for referral to other health professionals or specialists.
f. Guidelines on safety in acupuncture.

5.Treatment techniques

a. Needling: sterile and safe needling technique, selection of needles, proper insertion, depth, duration, manipulation (various measures of reinforcement, reduction, and uniform reinforcement-reduction) and withdrawal, and contraindications of needling.

6.Dry needling

a. Theory and history of dry needling
b. Clinical concept of dry needling
c. Indications, contraindications and precautions for dry needling.
d. Knowledge about myofacial trigger points and pathology of trigger points.
e. Assessment of myofacial pain and trigger points.
f. Effect of dry needling on myofacial trigger points.
g. Treatment techniques and safety procedure of dry needling.

Recommended books

1. Dommerholt J, Huijbregts PA, Myofascial trigger points: pathophysiology and evidence-informed diagnosis and management Boston: Jones & Bartlett 2011
2. The Gunn approach to the treatment of chronic pain. Gunn, C.C., Second ed. 1997, New York: Churchill Livingstone.
3. Travell and Simons' myofascial pain and dysfunction; the trigger point manual. Simons, D.G., J.G. Travell, and L.S. Simons, 2 ed. Vol. 1. 1999, Baltimore: Williams & Wilkins.
4. Dommerholt, J., O. Mayoral, and C. Gröbli, Trigger point dry needling. J Manual Manipulative Ther, 2006. 14(4): p. E70-E87.
5. Lewit, K., The needle effect in the relief of myofascial pain. Pain, 1979. 6: p. 83-90.
6. Baldry, P.E., Acupuncture, Trigger Points and Musculoskeletal Pain. 2005, Edinburgh: Churchill Livingstone.
7. Dommerholt, J. and R. Gerwin, D., Neurophysiological effects of trigger point needling therapies, in Diagnosis and management of tension type and cervicogenic headache, C. Fernández de las Peñas, L. Arendt-Nielsen, and R.D. Gerwin, Editors. 2010, Jones & Bartlett: Boston. p. 247-259.
8. Simons, D.G. and J. Dommerholt, Myofascial pain syndrome - trigger points. J Musculoskeletal Pain, 2007. 15(1): p. 63-79.
9. Furlan A, Tulder M, Cherkin D, Tsukayama H, Lao L, Koes B, Berman B, Acupuncture and Dry-Needling for Low Back Pain: An Updated Systematic Review Within the Framework of the Cochrane Collaboration. Spine 30(8): p. 944-963, 2005.

17. Malnutrition and Public Health 6th Semester

Learning objectives

- To understand the principles of nutritional epidemiology and its importance in public health
- To understand the prevalence and determinants of community‘s nutritional/ health problems.

Subject Title	: Malnutrition and Public Health
Total Hours / Week	: 3 Hours
Method of Assessment	: Written, Oral, Practical

Learning outcome

- To be able to understand public health implications of various nutritional problems.
- To understand strategies to overcome the same.

I-Introduction
Definition, aims, basic measurements and applications

II-Epidemiology
Study designs – methods applied in conducting nutrition research
Measuring exposure (diet) outcome (disease) relationship and their interpretation

III-Vital statistics in relation to public health nutrition
Infant morbidity and mortality Under five statistics

IV-Public health aspects of under nutrition
Etiology, public health implications, prevention and community based management of PEM, sever acute malnutrition and micronutrient deficiencies of public health significance.

V-Public health aspects of life style related disorders
Public health implications and preventive strategies for obesity, hypertension, coronary heart disease, diabetes, osteoporosis, cancer and dental carrier

VI-Nutrition education in community
Methods of education on nutrition awareness in community; nutrition demonstration, skits, visual aids.

Text books:

1. Nutrition in promoting the public health strategies, principles and practices, Kaufman M., Jones and Barlett Publishers, 2007.
2. Basic Epidemiology, Bonita R, Beaglehole R, Kjellstrom, 2nd Edition. WHO, 2006.
3. Community Nutrition-Applying epidemiology to contemporary practice,Frank G.C., 2nd Edition. Jones and Bartlett Publishers, 2008.

Reference books

1. Public Health Nutrition, Gibney M.J., Margetts, B.M., Kearney, J. M. Arab, I., (Eds), NS Blackwell Publishing, 2004.
2. National Consensus Workshop on Management of SAM children through Medical Nutrition Therapy (2009)-Compendium of Scientific Publications Volume I and II. Jointly organized by AIIMS, Sitaram Bhartia Institute of Science and Research, IAP (Subspeciality chapter on Nutrition), New Delhi. Sponsored by DBT.
3. Park's Textbook of Preventive and Social Medicine, .Park, K, 20th edition. Jabalpur M/s. Banarsidas, 2009.

Journal reference

1. International Journal of Food Safety, Nutrition and Public Health

2. Public Health Nutrition

Web reference

1.www.nutritionsociety.org/publications/nutrition...journals/public-health

2.www.nestlenutrition-institute.org/

3. www.nutritionsociety.org

4.www.internationalmedicalcorps.org/

5.www.internationalmedicalcorps.org/

18.Health Psychology 6th Semester

Learning objectives:

- To understand the importance of health behaviour and psychosocial factors in developing and maintaining the lifestyle diseases
- To elucidate the impact of stress on the immune system and chronic illness
- To understand the methods of management of lifestyle diseases

Learning Outcomes:

- By the end of the course the students will be able to
- Appreciate the impact of psychosocial factors in developing lifestyle diseases
- Understand the role of health related behaviour as the causative factor and curative factor in lifestyle diseases
- Understand the nature, causes and risk factors associated with major lifestyle diseases

Subject Title	: Health Psychology
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

Unit I - Introduction:

Concepts of health –definition of health –determinants of health– health psychology – the need for health psychology field – mind and body relationship – bio-psychosocial model versus bio-medical model – role of lifestyle changes in illness

Unit II - Health related behaviour:

Role of behaviour in disease and disorder – smoking and substance abuse - eating disorders and management – exercise and its benefits – developing a healthy diet

Unit III - Stress and disease:

Definition of stress –stages of stress – stress and personality – Psychoneuroimmunology – health outcomes of stress – stress management

Unit IV - Major lifestyle diseases I:

Coronary Heart Disease (CHD): Role of stress and personality in CHD – other psychosocial risk factor – modification of risk factors – management of Cardio vascular diseases **Hypertension:** causes of hypertension –psychological factors related to hypertension – management of hypertension

Stroke: Risk factors for stroke – stroke and quality of life – rehabilitative intervention

Unit V - Major lifestyle diseases II:

Diabetes: types of diabetes – lifestyle changes as a cause for diabetes – stress management and diabetes control

Cancer: psychological factors related to cancer – cancer related health behaviour - stress, coping and cancer – psychological intervention

Unit VI - Management of lifestyle diseases:

Effects of chronic illness – quality of life –emotional responses – coping mechanisms – pain management –dealing with terminally ill patients – lifestyle modification, prevention and health promotion

19.Evidence Based Practice and Clinical Reasoning 7th Semester

Subject Description: This subject follows the basic science subjects to provide the knowledge

about relevant aspects of evidence based practice and project work. The objective of this course is that after 30 hrs of lectures and discussion the student will be able to understand and implement the various aspect of evidence based practice in physiotherapy.

Subject Title	: Evidence Based Physiotherapy & Clinical Reasoning
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

1. Introduction to Evidence Based Practice: Definitions, Evidence Based Practice, Evidence Based Physiotherapy Practice [3 hours]
2. Concepts of Evidence based Physiotherapy: Awareness, Consultation, Judgement, Creativity [1 hours]
3. Development of Evidence based knowledge, The Individual Professional, Professionals within a discipline, Professionals across disciplines [2 hours]
4. Evidence Based Practitioner: The Reflective Practitioner, The E Model, Using the E Model [1 hours]
5. Finding the Evidence: Measuring outcomes in Evidence Based Practice, Measuring Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation [3 hours]
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 [2 hours]
7. Assessing the Evidence: Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurments, Biostatistics, The critical review of research using qualitative methods [4 hours]
8. Systematically reviewing the evidence: Stages of systematic reviews, Meta analysis, The Cochrane collabration [3 hours]
9. Economic evaluation of the evidence: Types of economic evaluation, Conducting economic evaluation, Critically reviewing economic evaluation, Locating economic evaluation in the literature [2 hours]
10. Using the evidence: Building evidence in practice; Critically Appraised Topics (CATs), CAT format, Using CATs, Drawbacks of CATs [2 hours]
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 [3 hours]
12. Communicating evidence to clients, managers and funders: Effectively communicating evidence, Evidence based communication in the face of uncertainity, Evidence based communication opportunities in everyday practice [2 hours]
13. Research dissemination and transfer of knowledge: Models of research transfer, Concrete research transfer strategies, Evidence based policy [2 hours]

Recommended books:

1. Evidence-Based Practice in Nursing and Health Care: A Guide to Best Practice ,by Bernadette Melnyk (Editor), Ellen Fineout-Overholt (Editor)
2. Evidence-Based Rehabilitation: A Guide to Practice,by Mary Law
3. Achieving Evidence-Based Practice, by Susan Hamer, BA, MA, RGN, FETC(DIST),
4. The Evidence-Based Practice by Stout, Randy A Hayes

20.Occupational Nutrition 7th Semester

Learning Objectives

To gain knowledge on the importance of nutrition with respect to occupational disease
To understand and adopt the dietary guidelines

To acquire knowledge and skills regarding the exposures of humans to hazards in the environment (including the work environment) and the assessment of the magnitude of risks.

Learning outcomes

To understand the compromised nutritional status with regards to the occupation to the individual and family.

Counselling techniques

Subject Title	: Evidence Based Physiotherapy & Clinical Reasoning
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

Unit I – Introduction:

Definition, type of works, occupational diseases, occupational hygiene. Basic constituents of food

Unit II - Work evaluation

Factors influencing work performance, calorie requirements for various types of activity, energy expenditure in relation to intensity of muscular work,

Unit III- Macro and Micronutrient requirements

Carbohydrate, fat and protein requirements for various types of activity, Vitamins and essential minerals like sodium calcium etc.

Unit IV- Nutritional Assessment

Evaluation of occupational risk factors, Nutritional status in industrial workers, Nutritional habits – food frequency and recalls

Unit V- Individuals at risk

Child labour Parental Labour and Child Nutrition Maternal labour, breastfeeding and infant health.

Unit VI - Workplace nutrition

Meal planning, wise selection of foods, designing nutrition strategy based on type of work, shift work nutrition, counselling techniques.

Text Books

1. Global Inequalities at Work : Work's Impact on the Health of Individuals, Families, and Societies, Jody Heymann , PublisherOxford University Press, 2003
2. Ecology, Ethnology, and Nutrition: A Study of Kondh Tribals and Tibetan Refugees, Srisha Patel, Mittal Publications, 1985 Reference Book
3. Industrial nutrition, Magnus Pyke, Macdonald & Evans, Original from the University of California, 1950. Journal 1. British journal of industrial medicine

21. Health Behaviour 7th Semester

Learning Objectives:

- To understand the importance of behavioural and psychosocial factors in developing and maintaining the lifestyle diseases
- To elucidate the impact of stress on the immune system and chronic illness To understand

the methods of health promotion

Learning Outcomes:

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

- Appreciate the impact of behavioural and psychosocial components in developing lifestyle diseases
- Understand the role of health related behaviour as the causative factor and curative factor in lifestyle diseases
- Understand the nature, causes and risk factors associated with major lifestyle diseases

Understand the prevention of illness and health promotion

Subject Title	: Health Behaviour
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

Unit I Introduction

Concepts of health –definition of health –determinants of health– health psychology as a field – mind and body relationship – biomedical model versus biopsychosocial model

Unit II – Links between stress, personality and illness

Stress and coping: Stress and stressors – types of stress – stages of stress – Psychoneuroimmunology – health outcomes of stress – coping – coping styles
Personality and illness: Psychosomatic medicine – the four humors and personality – Eysenck's personality dimensions – type A and B personality– locus of control

Unit III Major lifestyle diseases I

Coronary Heart Disease (CHD): Psychosocial risk factors – modification of risk factors – psychological management of Cardio vascular diseases

Unit IV Major lifestyle diseases II

Diabetes: Types of diabetes – lifestyle changes as a cause for diabetes – management Cancer: Psychological factors related to cancer – cancer related health behaviour – psychological intervention

Unit V Health enhancing behaviours

Promoting health: Role of behaviour in disease and disorder – health related behaviours: healthy diet, sleep and health, benefits of exercise – accident prevention

Text Books:

1. Taylor S. E. (2012), Health psychology (7th edition), TATA McGrawHil, New Delhi.
2. Marks D. F., Murray M., Evans B, Willig C, Woodall C. & Sykes C. (2008), Health

psychologytheory, research and practice (2nd edition), Sage south Asia Edition.

References Books:

1. Gatchel R. J., Baum A., & Krantz D. S. (1989). An introduction to health psychology (2nd edition), McGraw Hill, NY.

2. Feldman M. D. & Christensen J. F. (2008). Behavioural medicine – A guide for clinical practice (3rd edition), McGraw Hill, NY.

Online Resources:

- Global Health (EBSCO) (//www.google.co.in/search?q=Global+Health+(EBSCO)&rlz=1C1SAVU_enIN566IN566&oq=Global+Health+(EBSCO)&aqs=chrome..69i57.18704j0j8&sourceid =chrome&es_sm=93&ie=UTF8)

- Health news http://www.healthe.org.za/healthcategories/

22. Occupational therapy and speech therapy 8th Semester

Subject Description: The Subject is designed to provide an overview in the basics of Occupational Therapy, Speech and Language Therapy. This will help the student to make decisions during the course of patient evaluation to refer to the concerned specialist for a required therapy.

Subject Title	: Occupational therapy and speech therapy
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

Basic Occupational Therapy Section - A

1. Introduction to Occupational Therapy

2. Principles of Occupational Therapy
3. Human Structure and Function in Occupational Therapy
4. Therapeutic Media in Occupational Therapy
5. Therapeutic Modalities in Occupational Therapy
6. Health Care Management in Occupational Therapy
7. Pathophysiology in Occupational Therapy
8. Mental Health in Occupational Therapy
9. Physical Function in Occupational Therapy

Basic Speech Therapy Section-B

1. Anatomy and Physiology of the Organs of Language
2. Introduction to Audiology
3. Neurological Basis of Language, Linguistics, Phonetics and Phonology
4. Introduction to Language Disorders
5. Speech Therapy Intervention in Language Development Disorders, Aphasia, Speech Articulation Disorders, Deafness
6. Dyslexias and dysgraphias
7. Stuttering
8. Alternative Systems of Communication
9. Intervention in autism and Psychopathological Disorders
10. Intervention in Basic Language, Psychomotor Development
11. New Educational Methodologies for Children with Auditory Alterations
12. Technology Applied to Speech Processing
13. Speech Therapy Intervention in Cochlear Implantation

Recommended books:

1. Introduction to Occupational Therapy and Occupational Therapy Marketing, 2011, Karthik.
2. Occupational Therapy Activities, 2004, Estelle B. Breines.
3. International Handbook of Occupational Therapy Interventions, 2016, Ingrid Soderback.Speech and Language Therapy: The decision-making process when working with children, 2012, Myra Kersner.
4. Language Development And Disorders, 2010, Carol A. Angell.
5. Children with Communication Disorders Paperback, 2010, Pratibha Karanth.
6. Speech Therapy for the Physically Handicapped, 2011, Sara Stinchfield Hawk.

23.Hospital Operations Management 8th Semester

Learning Objectives

- To train working professionals in healthcare industry in all of functional and managerial aspects of healthcare
- To ensure transfer of evolving industry standards to academic activity and
- To provide framework to development of human resources in the healthcare industry

Learning Outcome

- Students will learn about the process, functions and structure of clinical, non-clinical & Support services of various hospital

Subject Title	: Hospital Operations Management
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

Unit I: Healthcare organization models:

Classification of hospital based on ownership - Classification based on functionality and bed size – Management of the hospital

Unit II: Managing Clinical departments:

In-Patient service – Out Patient service – Emergency service – Operation Theatre– ICU– Nursing Service – Lab service – Radiology service

Unit III: Managing Non-clinical and supportive departments:

CSSD – Pharmacy Service – Blood Bank– House-keeping – Dietary service – Bio-Medical Engineering Department - Medical Records Department

Unit IV: Designing standard operating protocols

Department KRA (Key Result Area) & KPI (Key Performance Indicator) - Effective clinical and non-clinical communication – Identifying patient touch points counselling staff who deal with patients regularly - Counselling patients and attenders

Unit V: Patient-centred care

The 8 dimensions of healthcare – picker institute: Emergence of patient family centric care – Patients' Preferences – Emotional Support & Physical comfort – Information & Education – Coordination of Care – Access to care – Continuity & Transition

Text Book

1. Hospital Administration & Management: A comprehensive Guide – Dasgupta
2. Hospital & Healthcare Administration – Gupta, Kant

Reference Books

1. Hospital Waste Management & its Monitoring – Sharma
2. The Hospital Administrator – George MA
3. Putting Patients First: Best Practices in Patient-Centered Care – Susan B Frampton, Patrick A Charmel&Planetree (Editors)

Web Resources

1. http://www.patient-centeredcare.org/inside/abouttheguide.html
2. http://www.mckinsey.com/insights/health_systems_and_services/hospitals _get_ serious_ about_operations
3. http://libs.daytonaedu.com/~d/H/Hospital-Operations.pdf

24.Interpersonal Skills 8th Semester

Learning Objectives:

- To make the students understand the importance of self-development.
- To support the students in building Interpersonal Skills.
- To impart knowledge about leadership and Time management.

Learning outcome:

- Students will understand the significance of interpersonal skills and teamwork in the working environment.

Subject Title	: Interpersonal Skills
Total Hours / Week	: 3 Hours
Method of Assessment	: Written

Unit I:

Self-Assessment - Self-Awareness - SWOT Analysis – Attitudes – Values - Goal setting – Stress Management

Unit II:

Communication process- Types – Barriers – Tips for Effective Communication - Speaking Skills - Listening Skills

Unit III:

Group Discussion – Resume Writing- Importance of Professional behavior at workplace – Ethics and Integrity at workplace - Grooming - Email and telephone etiquette

Unit IV:

Team Work – Conflict Management – Motivating Others – Good Leadership Behaviors – Time Management

Text Books:

1. Personality development and soft Skills, Barun K Mitra , Oxford Higher Education
2. Organizational Behaviour , Fred Luthans , McGraw Hill

Reference Books:

1. 7 Habits of Highly effective people, Stephen Covey, Free press
2. You can win, Shiv Khera , Macmillan

Web References:

1. http://www.trainingcoursematerial.com/free-training-articles
2. http://www.unimenta.com/materials/Unimenta-free-and-sample-materials

ANNEXURES

22.SAMPLE GRADE CARD

22.1 METHODOLOGY

Course code	Course title	Credits earned	Marks secured (max 200)	Grade point	Grade	Credit * grade	Result
BPT 111	Anatomy	12	85	9	A+	108	Pass
BPT 112	Physiology	12	75	8	A	96	Pass
Total		24	80	8.5	A+	204 / 24 = 8.5	pass

22.2 Sample grade card

Sri Devaraj Urs Academy of Higher Education and Research

(Deemed to be a university- Declared under Section 3 of the UGC Act, 1956) Tamaka, Kolar, Karnataka

CHOICE BASED CREDIT SYSTEM – CBCS GRADE CARD

Name of the candidate :			D.O.B	
Program	BPT – Bachelor of Physiotherapy		Regn. No	
Semester	1st semester		Month & year	Nov 2017
INSTITUTION : DEPARTMENT OF PHYSIOTHERAPY				
Course code	Course title	CREDITS	LETTER CODE	RESULT
BPT 111	ANATOMY	12	A+	PASS
BPT 112	PHYSIOLOGY	12	A	PASS
*** End of the statement ***				
		Credits and grade point (current semester)		
	Credits registered	24		
	Credits earned	24		
	Grade point average	8.5		

Date :

Controller of Examinations

22.3 Sample grade card – details to be printed behind the mark sheet

Letter Grade	Grade Point
O (Outstanding)	10
A+ (Excellent)	9
A (Very Good)	8
B (Good)	7
P (pass)	6
F (Fail)/ RA (Reappear)	0
Ab (Absent)	0
Not Completed (NC)	0
RC- Repeat the course	0

Checked by	
Verified by	

23.NO DUES CARD

FOR END SEMESTER RELEASE OF HALL TICKET ONLY

Department:				
Name of the Student:				
Register Number:				
Program:			Semester	Month/year
S. No.	Department		Signature & Seal	Remarks
1.	Department	Library		
		Office		
2.	Hostel			
3.	Library			
4.	Accounts			
5	Miscellaneous			
6	Class - Coordinator			
HOD				

24.NO DUES CARD

FOR RELEASE OF FINAL MARK STATEMENT, TRANSCRIPT, PROVISIONAL DEGREE ETC.

Department:				
Name of the Student:				
Register Number:				
Program:			Semester	Month/year
S. No.	Department		Signature & Seal	Remarks
1.	Department	Library		
2.		Office		
3.	Hostel			
4.	Library			
5.	Accounts			
6.	Admission department			
7.	Miscellaneous			
8.	Class - Coordinator			
HOD				