

# FOUNDATION UNIVERSITY ISLAMABAD



Submitted to:

**Quality Enhancement Cell**



## **SELF ASSESSMENT REPORT 2019 (DOCTOR OF PHYSICAL THERAPY)**

**Foundation University Institute of Rehabilitation Sciences**

# **Executive Summary**

Self-Assessment Report (SAR) is an effective tool in measuring and monitoring the outcome of a program. This is employed in Degree Awarding Institutes of Pakistan to identify strengths and weaknesses of the degree programs. The tool is primarily dependent on surveys that are conducted at the end of the session. These surveys include the Faculty's survey, the Course survey, the Employer's survey and the Gradating Students' survey.

This SAR concerns the department of Rehabilitation Sciences that executes Doctor of Physical Therapy (DPT) programs. The report concerns the postgraduate programs during the semester Spring 2018. The report includes the surveys and relevant information as well as the strengths and weaknesses of the programs as identified through surveys.

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# Self-Assessment Report

## Introduction

Foundation University Islamabad (FUI) is a private university, chartered by the Federal Government of Pakistan in October 2002. The university was established with a view to produce professionals with Islamic moral and ethical values. The Foundation University is committed to promote and impart quality education with character building of the new generation in the light of Islamic principles and values. Foundation University is committed to a value based integrated educational philosophy. It is running 9 faculties in 2 different campuses.

## University Mission Statement

*The FUI's mission is to inspire creative inquiry and research to foster personal and professional development of its students. The FUI is committed to provide equitable access to holistic education in diverse disciplines to produce valuable human resource for the local and the global communities.*

## Foundation University Institute of Rehabilitation Sciences

1. Doctor of Physical Therapy (DPT)

### Program Selected

Foundation University has selected the **Doctor of Physical Therapy (DPT)** as first model program for Self-Assessment Report (SAR) for the year 2018-19 under the directives of HEC.

The program has got inbuilt mechanism for the revision of syllabi, has competent faculty and adequate infrastructure. New and modern tools have been introduced in the program to conduct research and quality teaching.

### Program Evaluation

The program is being evaluated based on 8 criterion and 31 standards as given in the Self-Assessment Manual provided by Higher Education Commission (HEC).

## Criterion 1: Program Mission, Objectives and Outcomes

### Standard 1-1

**The program must have documented measurable objectives that support institution mission statements.**

## **Program Mission Statement**

*Doctor of Physical Therapy (DPT) program aims to impart theoretical, practical and clinical knowledge and skills to Under-Graduate students to transform them into competent Health professionals along with sense of ethical and moral obligations.*

## **Program Objectives**

Graduates of the Doctor Of Physical Therapy Programme Will:

1. Demonstrate in-depth knowledge of the basic and clinical sciences relevant to physical therapy, both in their fundamental context and in their application to the discipline of physical therapy.
2. Understand, correlate and apply theoretical foundations of knowledge to the practice of physical therapy; evaluate and clarify new or evolving theory relevant to physical therapy.
3. Demonstrate the behaviors of the scholarly clinician by developing and utilizing the process of critical thinking and inquiry, particularly focused on the improvement of the practice of physical therapy and the delivery of health care.
4. Engage in reflective practice through sound clinical decision making, critical self-assessment and commitment to lifelong learning.
5. Demonstrate mastery of entry level professional clinical skills. Provision of these services is based on the best available evidence and includes physical therapy examination, evaluation, diagnosis, prognosis, intervention, prevention activities, wellness initiatives and appropriate health care utilization.
6. Prepared to influence the development of human health care regulations and policies that are consistent with the needs of the patient and of the society.
7. Demonstrate leadership, management, and communication skills to effectively participate in physical therapy practice and the health care team.
8. Incorporate and demonstrate positive attitudes and behaviors to all persons.
9. Demonstrate the professional and social skills to adapt to changing health care environments to effectively provide physical therapy care.

**Program Objective Assessment**

| <b>S#</b> | <b>Objectives</b>  | <b>How measured</b>   | <b>When measured</b>                                   | <b>Improvement identified</b> | <b>Improvement made</b>           |
|-----------|--|---|--|-------------------------------|-----------------------------------|
| 1.        | Demonstrate in-depth knowledge of the basic and clinical sciences relevant to physical therapy, both in their fundamental context and in their application to the discipline of physical therapy.  | Class tests<br>Sessional exams<br>Osci/ Vivas terminal examinations<br>Clinical exams | Weekly<br>After 3 months<br><br>At the end of semester | Marks / GPA / grades          | CGPA                              |
| 2.        | Understand, correlate and apply theoretical foundations of knowledge to the practice of physical therapy; evaluate and clarify new or evolving theory relevant to physical therapy.  | Clinical rotations during supervised clinical practice to assigned wards.             | Weekly measured  | Hands on performance          | Practice and handling repeatedly. |
| 3.        | Demonstrate the behaviors of the scholarly clinician by developing and utilizing the process of critical thinking and inquiry, particularly focused on the improvement of the practice of physical therapy and the delivery of health care | Through research, Evidence based Scenario   | Weekly measured  | Marks / GPA / grades          | Through Practice                  |
| 4.        | Engage in reflective practice through sound clinical decision making, critical self-assessment and commitment to lifelong learning   | Supervised clinical practice  | Weekly measured  | MOCK tests                    | Practice and handling repeatedly. |
| 5.        | Demonstrate mastery of entry level professional clinical skills. Provision of these services is  | Supervised clinical practice/ OSCE  | At the end of semester                                 | Marks / GPA / grades          | Practice and handling repeatedly. |



|    |  |   |                        |  |                                   |
|----|--|---|------------------------|--|-----------------------------------|
|    | based on the best available evidence and includes physical therapy examination, evaluation, diagnosis, prognosis, intervention, prevention activities, wellness initiatives and appropriate health care utilization. |   |                        |  |                                   |
| 6. | Prepared to influence the development of human health care regulations and policies that are consistent with the needs of the patient and of the society.  | Supervised clinical practice  | At the end of semester | Marks / GPA / grades   | Practice and handling repeatedly. |
| 7. | Demonstrate leadership, management, and communication skills to effectively participate in physical therapy practice and the health care team  | Administrative/ committee work. (welfare, blood donation, ethical , arts and craft, literary, debating, dramatic, hiking, sports committee etc) | Throughout semester    | Smooth and time efficient functioning of the respective event. | Repeatedly                        |
| 8. | Incorporate and demonstrate positive attitudes and behaviors to all persons.   | Organization of various events.   | Throughout semester    | Smooth and time efficient functioning of the respective event. | Repeatedly                        |
| 9. | Demonstrate the professional and social skills to adapt to changing health care environments to effectively provide physical therapy care.   | Physical therapy management techniques including manual and therapeutics skills.  | Throughout semester    | Hands on patients  | Practice and handling repeatedly  |

## **Alignment of Program Objectives with Program & University Mission Statements**

Program objectives intend to impart not only clinical and diagnostic skills but moral and ethical information as well. This is done through planned set of activities during the execution of the DPT program. These activities include overall curriculum composition and its delivery, practical work and projects performed at required stages.

### **Main Elements of Strategic Plan**

The main elements as discussed above, of a strategic plan for the selected course are as under:

- a. Curriculum Composition
- b. Practical work and projects
- c. Research Activities

### **Curriculum Composition**

DPT program comprises of core courses as per university requirements. It has 64 core courses with 6 credit hours research thesis. Curriculum is divided into different segments that builds student's base through basic set of courses and imparts advance knowledge by using advance courses. List of courses is available in section 3.3.1.

### **Practical Work and Projects**

Practical work and projects are planned at desired stages during the program execution to enhance the working skills of the students. Clinical setting in FFH Rawalpindi is available for students to practice the clinical work during the whole program.

### **Research Work**

At the end of their program, students are required to submit a final project that demonstrates their analysis, designing, solution building, implementation and report writing skills, in the form of designed project and its technical report.

### **Standard 1-2**

**The program must have documented outcomes for under graduating students. It must be demonstrated that the outcome support the program objectives and that under graduating students are capable of performing these outcomes.**

### **Program Outcomes**

Under Graduates of the Doctor of Physical Therapy Programme will:

1. Demonstrate in-depth knowledge of the basic and clinical sciences relevant to physical therapy, both in their fundamental context and in their application to the discipline of physical therapy.
2. Understand, correlate and apply theoretical foundations of knowledge to the practice of
3. Physical therapy; evaluate and clarify new or evolving theory relevant to physical therapy.
4. Demonstrate the behaviors of the scholarly clinician by developing and utilizing the process of critical thinking and inquiry.
5. Engage in reflective practice through sound clinical decision making, critical self-assessment and commitment to lifelong learning.
6. Prepared to influence the development of human health care regulations and policies that are consistent with the needs of the patient and of the society.
7. Demonstrate leadership, management, and communication skills to effectively participate in Physical therapy practice and the health care team.
8. Incorporate and demonstrate positive attitudes and behaviors to all persons.
9. Demonstrate the professional and social skills to adapt to changing health care environments to effectively provide physical therapy care.

Following table shows the link between program objectives and program outcomes:

| Program Objectives | Program Outcomes |   |   |   |   |   |   |   |   |
|--------------------|------------------|---|---|---|---|---|---|---|---|
|                    | 1                | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1                  | X                | X | X |   |   |   |   |   |   |
| 2                  |                  | X | X | X |   |   |   |   |   |
| 3                  |                  | X |   | X | X | X | X | X |   |
| 4                  |                  | X |   | X |   |   |   |   | X |
| 5                  |                  |   |   | X |   |   |   |   |   |

|   |   |   |  |   |   |   |   |   |   |
|---|---|---|--|---|---|---|---|---|---|
| 6 |   |   |  | X |   |   |   | X |   |
| 7 |   | X |  |   | X |   |   |   |   |
| 8 |   |   |  |   | X | X | X | X |   |
| 9 | X | X |  |   |   |   |   |   | X |

**Table 2: Outcomes versus Objectives**

**Standard 1-3**

**The results of Program’s assessment and the extent to which they are used to improve the program must be documented.**

**Program Strength**

- Academic calendar is adhering to and examinations schedule prepared at the beginning of the year.
- Curriculum Design, development and organization are based upon set, well defined and approved criteria by HEC
- Properly scheduled Examinations and classes.
- Number of Courses along with their titles and credit hours for each year, course contents for degree program are fully planned
- Transparent admission, registration and recruiting policy
- Curriculum is accredited by HEC
- Keeping in view ISLAMIC VALUES inculcating state of the “ART EDUCATION” most of the students specifically girl’s students would prefer to join this institution.

**Program Weaknesses**

- Guidance/ Advisory process for students
- Lack of emphasis on extra-curricular activities
- lack powerful and expanded international library with online access to medical journals

**Faculty Development**

- Indigenous Plans for faculty development

- Practical skills should be enhanced
- Research facilities and funds
- Balance of teaching workload and research activities
- University Increments after the accomplishment of higher degree of education (PHD).
- International opportunities for courses/ certification

#### **Standard 1-4**

**The department must assess its overall performance periodically using quantifiable measures.**

Following is the data as per requirements listed in standard 1-4 main section:

#### **Enrolled Students in last three years**

- Total students enrolled in last three years are 300.

#### **Student Faculty Ratio**

- DPT program has **15:1** student faculty ratio.

#### **Average GPA per Semester**

- The average GPA is 2.98

#### **Average Completion Time**

The DPT program has average completion time of 5 years consisting of 10 semesters.

#### **Student Course Evaluation Survey**

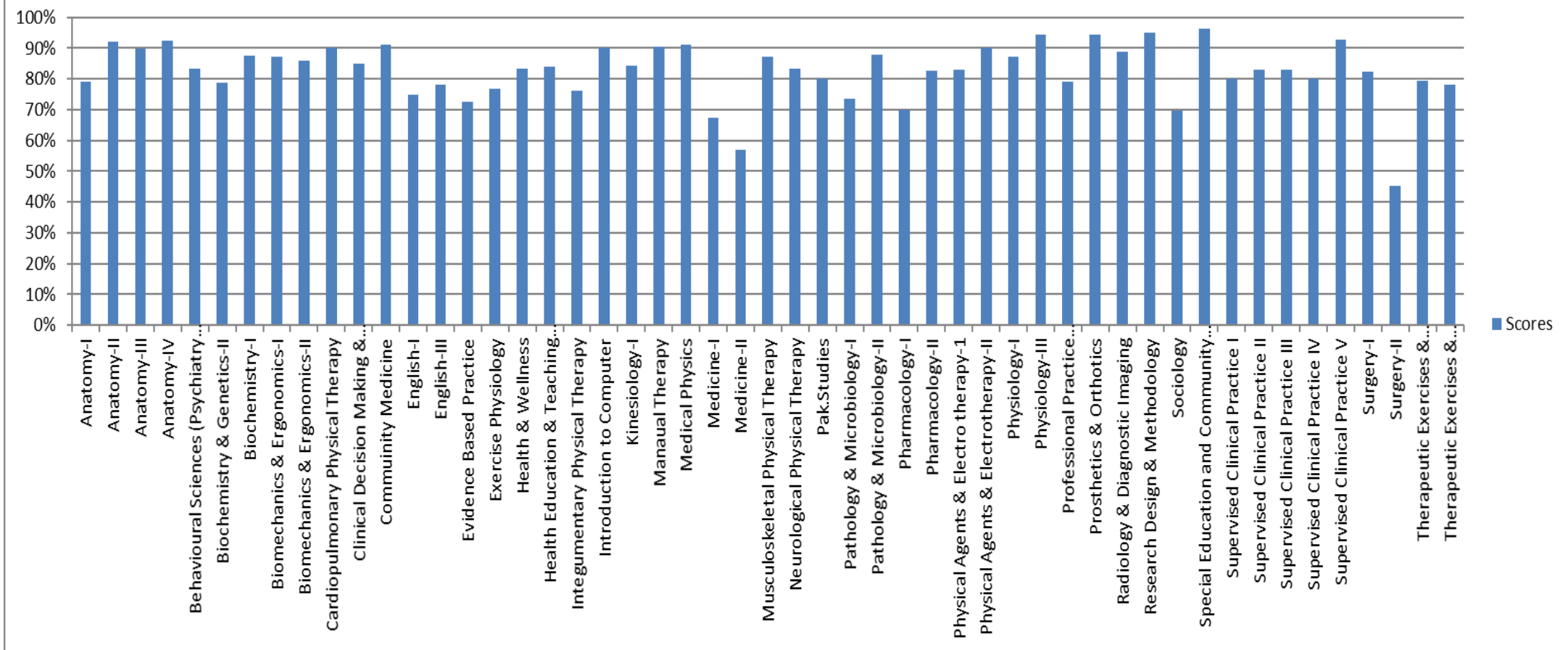
Students of DPT have graded the courses against the course structure, teaching methodology, learning objectives and outcomes and practical implementation of theory. QEC staff conducted the course evaluation to ensure unbiased feedback. The results showed that average score of DPT course evaluation is 83% as graded by students. Following is the list of DPT courses that are being evaluated by the students along with graded scores in percentage:-

| <b>Course Name</b> | <b>Percentage(s)</b> |
|--------------------|----------------------|
| <b>Anatomy-I</b>   | 79%                  |
| <b>Anatomy-II</b>  | 92%                  |
| <b>Anatomy-III</b> | 90%                  |

|  |     |
|--|-----|
| <b>Anatomy-IV</b>  | 92% |
| <b>Behavioral Sciences (Psychiatry &amp; Psychology)</b>     | 83% |
| <b>Biochemistry &amp; Genetics-II</b>                        | 79% |
| <b>Biochemistry-I</b>  | 88% |
| <b>Biomechanics &amp; Ergonomics-I</b>                       | 87% |
| <b>Biomechanics &amp; Ergonomics-II</b>                      | 86% |
| <b>Cardiopulmonary Physical Therapy</b>                      | 90% |
| <b>Clinical Decision Making &amp; Differential Diagnosis</b> | 85% |
| <b>Community Medicine</b>                                    | 91% |
| <b>English-I</b>   | 75% |
| <b>English-III</b>   | 78% |
| <b>Evidence Based Practice</b>                               | 73% |
| <b>Exercise Physiology</b>                                   | 77% |
| <b>Health &amp; Wellness</b>                                 | 83% |
| <b>Health Education &amp; Teaching Methodology</b>           | 84% |
| <b>Integumentary Physical Therapy</b>                        | 76% |
| <b>Introduction to Computer</b>                              | 90% |
| <b>Kinesiology-I</b>   | 84% |
| <b>Manual Therapy</b>  | 91% |
| <b>Medical Physics</b>                                       | 91% |
| <b>Medicine-I</b>  | 67% |
| <b>Medicine-II</b>   | 57% |
| <b>Musculoskeletal Physical Therapy</b>                      | 87% |
| <b>Neurological Physical Therapy</b>                         | 83% |
| <b>Pakistan Studies</b>                                      | 80% |
| <b>Pathology &amp; Microbiology-I</b>                        | 74% |
| <b>Pathology &amp; Microbiology-II</b>                       | 88% |
| <b>Pharmacology-I</b>  | 70% |
| <b>Pharmacology-II</b>                                       | 83% |
| <b>Physical Agents &amp; Electro therapy-1</b>               | 83% |
| <b>Physical Agents &amp; Electrotherapy-II</b>               | 90% |
| <b>Physiology-I</b>  | 87% |
| <b>Physiology-III</b>  | 94% |
| <b>Professional Practice (Laws, Ethics, Administration)</b>  | 79% |
| <b>Prosthetics &amp; Orthotics</b>                           | 94% |
| <b>Radiology &amp; Diagnostic Imaging</b>                    | 89% |
| <b>Research Design &amp; Methodology</b>                     | 95% |
| <b>Sociology</b>   | 70% |
| <b>Special Education and Community Based Rehabilitation</b>  | 96% |
| <b>Supervised Clinical Practice I</b>                        | 80% |

|  |            |
|--|------------|
| <b>Supervised Clinical Practice II</b>               | <b>83%</b> |
| <b>Supervised Clinical Practice III</b>              | <b>83%</b> |
| <b>Supervised Clinical Practice IV</b>               | <b>80%</b> |
| <b>Supervised Clinical Practice V</b>                | <b>93%</b> |
| <b>Surgery-I</b>                                     | <b>82%</b> |
| <b>Surgery-II</b>                                    | <b>45%</b> |
| <b>Therapeutic Exercises &amp; Techniques II</b>     | <b>79%</b> |
| <b>Therapeutic Exercises &amp; Techniques-1</b>      | <b>78%</b> |
| <b>DPT Accumulative Course Evaluation percentage</b> | <b>83%</b> |

## FUIRS DPT - Course Evaluation Survey -





## Student Teacher Evaluation Survey

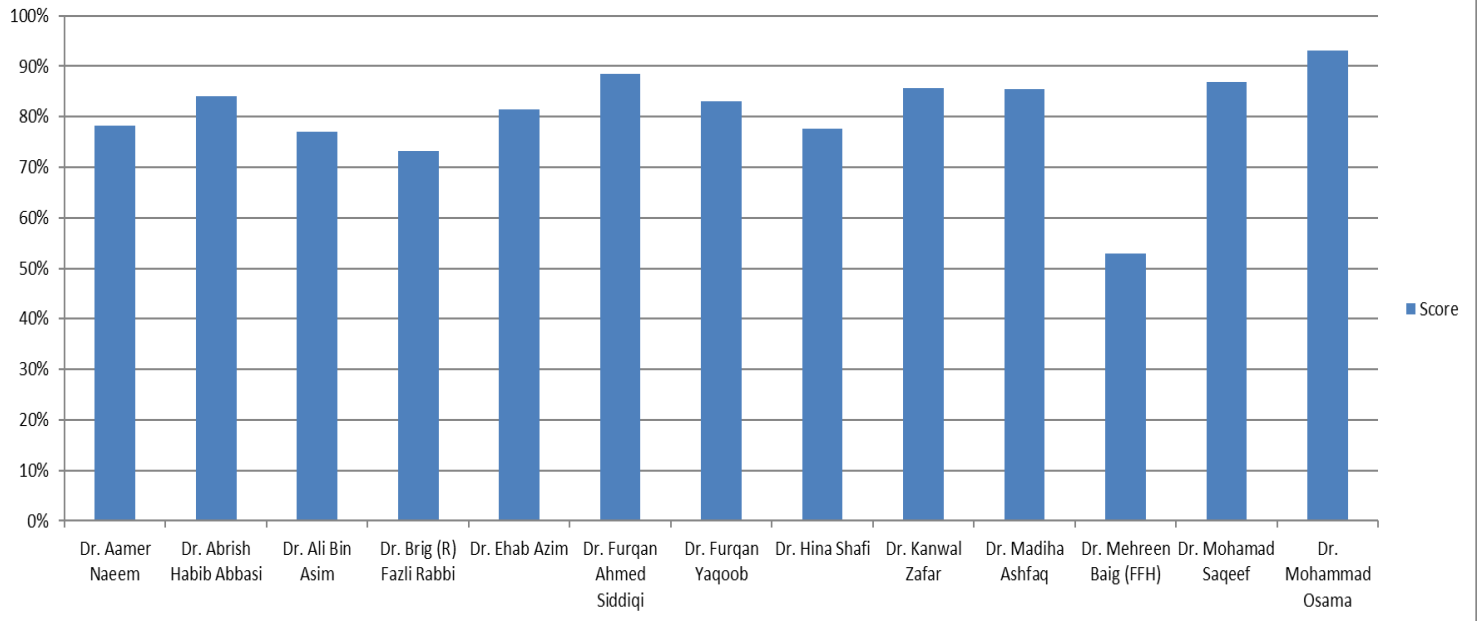
Students of DPT have graded the teachers against their lecture preparation, punctuality, general behavior, subject knowledge and teaching methodology.

Following is the list of teachers that are being evaluated by the students along with the serial number and graded scores in percentage.

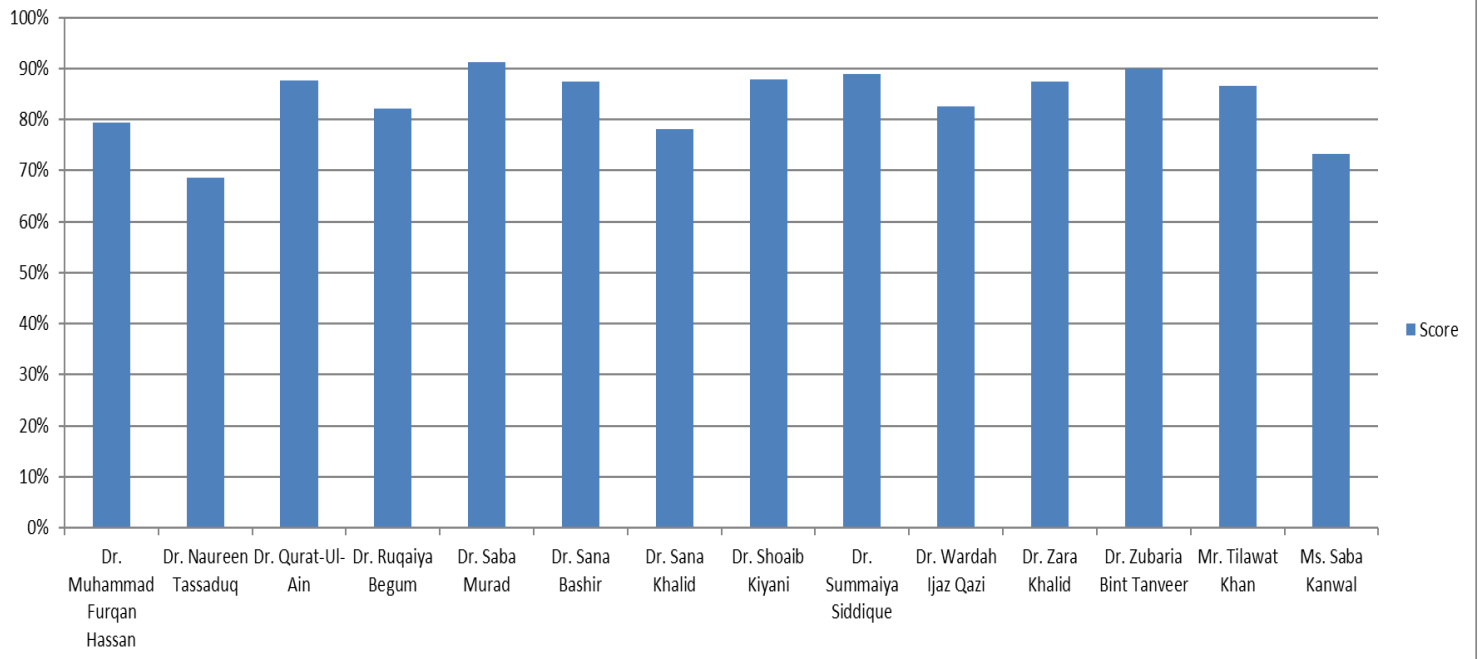
| Sr # | Teacher Name             | Score | Sr # | Teacher Name             | Score |
|------|--------------------------|-------|------|--------------------------|-------|
| 1    | Dr. Aamer Naeem          | 78%   | 15   | Dr. Naureen Tassaduq     | 69%   |
| 2    | Dr. Abrish Habib Abbasi  | 84%   | 16   | Dr. Qurat-UI-Ain         | 88%   |
| 3    | Dr. Ali Bin Asim         | 77%   | 17   | Dr. Ruqaiya Begum        | 82%   |
| 4    | Dr. Brig (R) Fazli Rabbi | 73%   | 18   | Dr. Saba Murad           | 91%   |
| 5    | Dr. Ehab Azim            | 81%   | 19   | Dr. Sana Bashir          | 87%   |
| 6    | Dr. Furqan A. Siddiqi    | 88%   | 20   | Dr. Sana Khalid          | 78%   |
| 7    | Dr. Furqan Yaqoob        | 83%   | 21   | Dr. Shoaib Kiyani        | 88%   |
| 8    | Dr. Hina Shafi           | 78%   | 22   | Dr. Summaiya Siddique    | 89%   |
| 9    | Dr. Kanwal Zafar         | 86%   | 23   | Dr. Wardah Ijaz Qazi     | 83%   |
| 10   | Dr. Madiha Ashfaq        | 85%   | 24   | Dr. Zara Khalid          | 87%   |
| 11   | Dr. Mohamad Saqeef       | 87%   | 25   | Dr. Zubaria Bint Tanveer | 90%   |
| 12   | Dr. Mohammad Osama       | 93%   | 26   | Mr. Tilawat Khan         | 87%   |
| 13   | Dr. M. Furqan Hassan     | 79%   | 27   | Ms. Saba Kanwal          | 73%   |

QEC staff carried out course and teacher evaluation survey in order to ensure the unbiased feedback from students. The gathered data was analyzed by QEC and results were provided to department officials for further actions. The results showed that the average DPT teachers scored **82%** marks as graded by students.

**FUIRS**  
**DPT Teacher Evaluation Survey - Fall 2019**

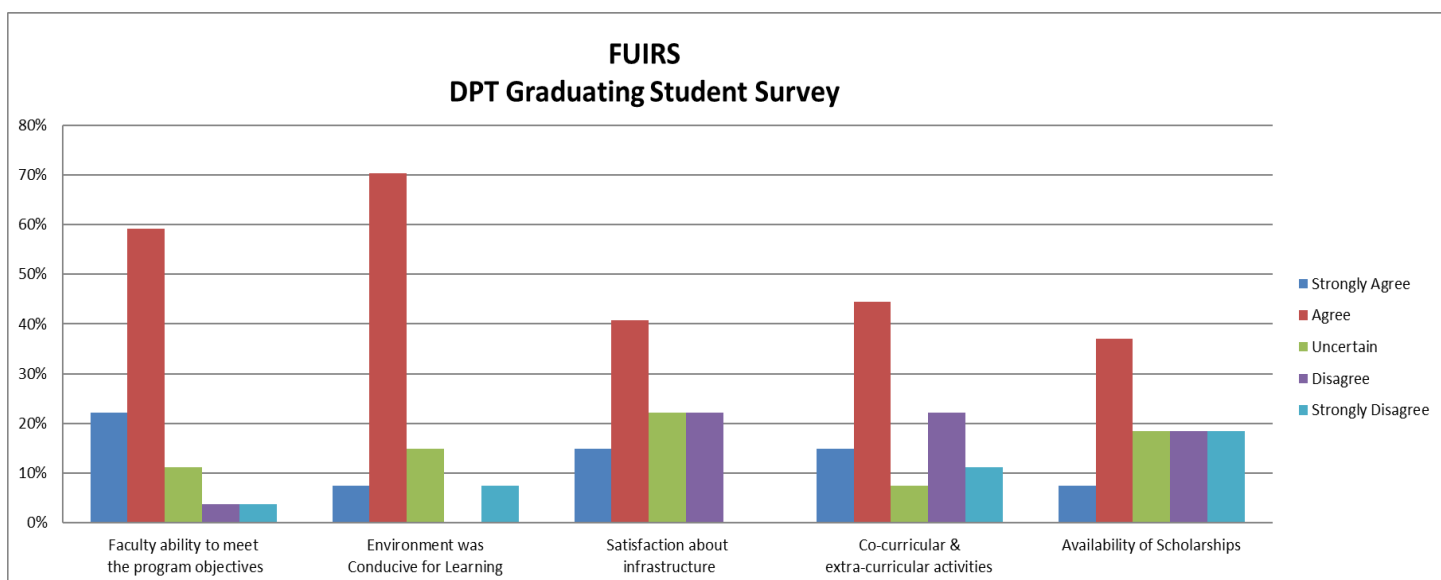
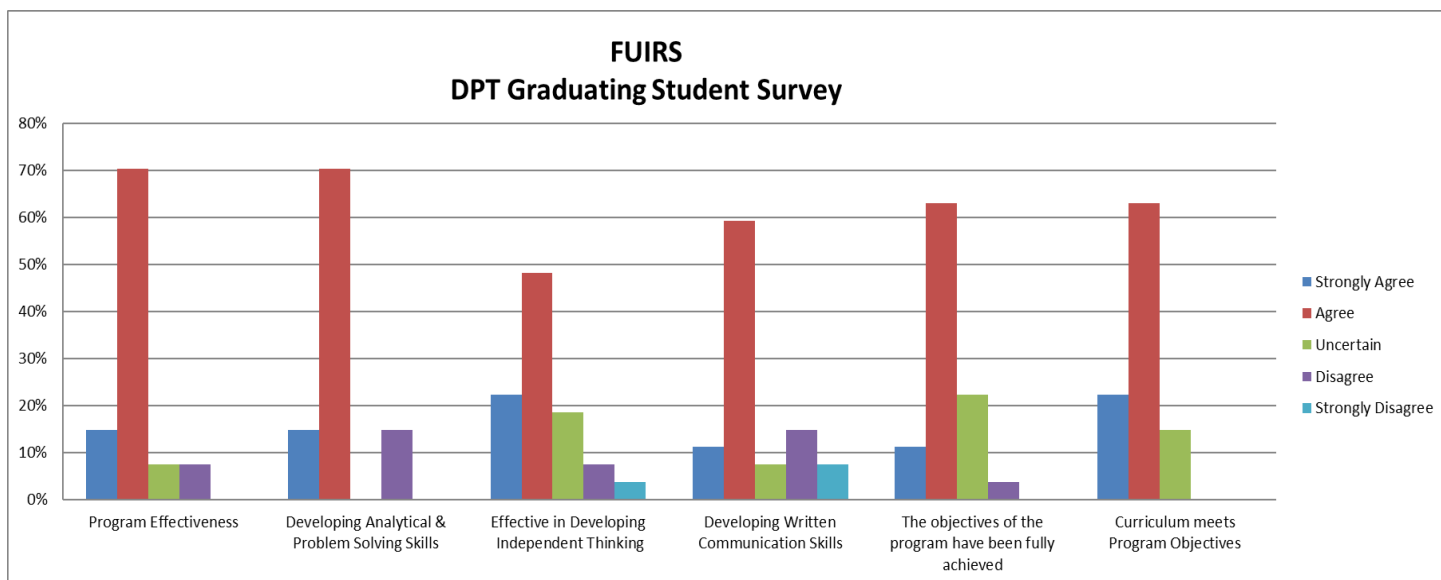


**FUIRS**  
**DPT Teacher Evaluation Survey - Fall 2019**



**Graduating Student Survey:**

QEC has carried out Graduating Student Survey of DPT final year batch on the basis of Program Effectiveness, Development of Problem Solving Skills and Independent Thinking, Curriculum ability to meet Program Objectives, Environment, infrastructure and availability of resources. The graphical representation of results are as under:-



**Employer Satisfaction**

Not available yet.

**Research**

The program faculty published approx. 106 research papers in different journals. List of publications is attached in Annexure E.

**Community Service**

Foundation University Institute of Rehabilitation Sciences staff and students worked with Fauji Foundation and participated in following of community services as listed below:

- Annual Charity bake sale (0.1 million)

**Criterion 2: Curriculum Design and Organization:**

| Semester                        | Course no.  | Category (credit hours) |              |                                |                     |
|---------------------------------|---|-------------------------|--------------|--------------------------------|---------------------|
|                                 |   | Basic sciences          | Core courses | Humanities and Social Sciences | Technical electives |
| First Semester<br>(6 Courses)   | DPAN114<br>DPPH113<br>DPKI113<br>DPEN113<br>DPSS112<br>DPCO113            | 7                       | 3            | 5                              | 3                   |
| Second Semester<br>(6 Courses)  | DPAN124<br>DPPH123<br>DPKI123<br>DPEN123<br>DPIS112<br>DPSO112            | 7                       | 3            | 7                              | -----               |
| Third Semester<br>(6 Courses)   | DPAN233<br>DPPH233<br>DPBG212<br>DPRN233<br>DPBE213<br>DMPP213            | 8                       | 6            | 3                              | -----               |
| Fourth Semester<br>(6 Courses)  | DPAN243<br>DPEP243<br>DPBG223<br>DPMB212<br>DPBE223<br>DPHW212            | 11                      | 5            | ----                           | ----                |
| Fifth Semester<br>(7 Courses)   | DPPR312<br>DPPM312<br>DPTE313<br>DPPE313<br>DPBI313<br>DPBS312<br>DPPC313 | 4                       | 12           | 2                              | ----                |
| Sixth Semester<br>(6 Courses)   | DPPR322<br>DPPM323<br>DPPE323<br>DPBI323<br>DPCM313<br>DPCP323            | 8                       | 9            | ----                           | ----                |
| Seventh Semester<br>(6 Courses) | DPME413<br>DPSU413<br>DPRD413<br>DPMU414<br>DPEB413<br>DPCP432            | 9                       | 9            | ----                           | ----                |

|                                |   |      |    |      |      |
|--------------------------------|---|------|----|------|------|
| Eighth Semester<br>(6 Courses) | DPME423<br>DPSU423<br>DPNE414<br>DPSI413<br>DPEP413<br>DPCP442            | 6    | 12 | ---- | ---- |
| Ninth Semester<br>(7 Courses)  | DPCA513<br>DPMT513<br>DPCD513<br>DPPO513<br>DPPP512<br>DPIN512<br>DPCP552 | ---- | 16 | 2    | ---- |
| Tenth Semester<br>(6 Courses)  | DPGO512<br>DPPA512<br>DPGE512<br>DPSP512<br>DPCP562<br>DPRP516            | ---- | 18 | ---- | ---- |

**Curriculum Course Requirement Table**

**Title of Degree Program**

Doctor of Physical Therapy (DPT)

**Definition of Credit Hour:**

One credit hour is 1 hour of theory lecture or 3 hours of clinical work in a week.

**Degree plan**

Following is the complete list of courses taught in the selected program. Section 4.5 shows the details about all the courses taught in DPT program, including pre-requisites and books.

**Detail description of the program:**

**Program:** Doctor of Physical Therapy

**Duration:** Five-years, full time, 174 credit hours

**Level:** Under-Graduate

**Eligibility:** FSC (Pre-medical) minimum 55%marks in aggregate with HEC equivalency.

**Course:** Semester Based (10-Semesters) duration (18-weeks each)

**Credit Hours:** 174 - credit Hours

**Description of the Degree Program:-**

Doctor of Physical therapy (D.P.T) is a undergraduate degree (equivalent to 17 years

| % | Grade | GPC |
|---|-------|-----|
|---|-------|-----|

**Grading System**

of schooling/Master according to HEC criteria), a higher level qualification degree program, offering more intense clinical training and preparing under graduates for higher-level work and better career outcomes. Under Graduates will possess the most current knowledge in the field of physical therapy. The Doctor of Physical therapy is a clinical degree clearly distinguished from the academic research-based degree Doctor of Philosophy (PhD).

**Pre-requisites for DPT program:**

- FSC pre medical or equivalent degree with minimum unadjusted 55% marks.
- Transcripts of metric and FSC programs.

**Assessment Criteria/Plan**

- Sessional Exam after 8 weeks
- Terminal Exam after 18 weeks

❖ **Subjects with theory, viva and practical:**

- a) Theory paper : 25% MCQs and 25% SEQs ; Total marks = 50
- b) Duration of paper = 1 hours 30 minutes

**Assessment Criteria:**

- a) Assignments = 10%
- b) Sessional Exam = 30%
- c) Final Exam = 40 %
- d) Viva & practical = 20 %
- e) Cumulative 50% = Pass

❖ **Subjects only have theory papers**

- a) Theory paper : 25% MCQs and 25% SCQs marks = 50
- b) Duration of paper = 1 hours 30 minutes

**Assessment Criteria:**

- a) Assignments = 10%
- b) Sessional Exam = 40%
- c) Final Exam = 50%
- d) Cumulative 50% = pass

|        |    |      |
|--------|----|------|
| 0-49   | F  | 0.00 |
| 50     | D  | 1.50 |
| 51     |    | 1.55 |
| 52     |    | 1.60 |
| 53     |    | 1.65 |
| 54     |    | 1.70 |
| 55     | D+ | 1.75 |
| 56     |    | 1.80 |
| 57     |    | 1.85 |
| 58     |    | 1.90 |
| 59     |    | 1.95 |
| 60     | C  | 2.00 |
| 61     |    | 2.08 |
| 62     |    | 2.16 |
| 63     |    | 2.24 |
| 64     |    | 2.32 |
| 65     | C+ | 2.40 |
| 66     |    | 2.48 |
| 67     |    | 2.56 |
| 68     |    | 2.64 |
| 69     |    | 2.72 |
| 70     | B  | 2.80 |
| 71     |    | 2.88 |
| 72     |    | 2.96 |
| 73     |    | 3.04 |
| 74     |    | 3.12 |
| 75     | B+ | 3.20 |
| 76     |    | 3.28 |
| 77     |    | 3.36 |
| 78     |    | 3.44 |
| 79     |    | 3.52 |
| 80     | A  | 3.60 |
| 81     |    | 3.68 |
| 82     |    | 3.76 |
| 83     |    | 3.84 |
| 84     |    | 3.92 |
| 85-100 | A+ | 4.00 |



### Curriculum Breakdown

**Course Code Description:**

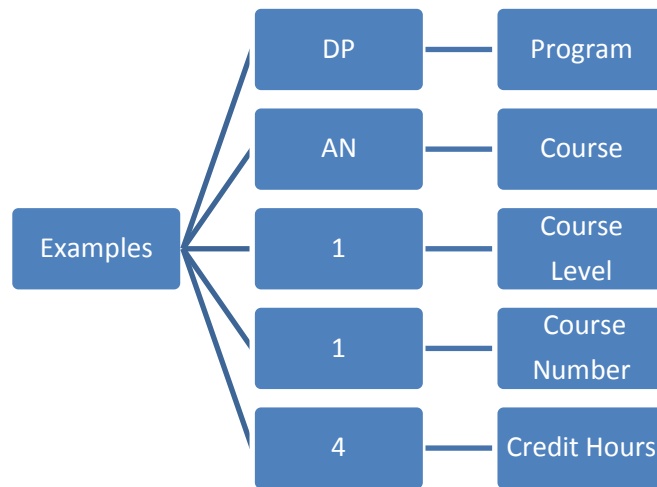
1<sup>st</sup> Three Alphabets → Program

2<sup>nd</sup> two Alphabets → Course

1<sup>st</sup> digit → Course Level

2<sup>nd</sup> digit → Course Number

3<sup>rd</sup> digit → Credit Hours



**Course Number: Same subject and multiple courses, e.g; EBP-1, EBP-2 etc.**

**Detail Contents:**

**Break down of Semesters with subject codes & credit hours**

**SCHEME OF STUDIES FOR 5 YEARS**

**DOCTOR OF PHYSICAL THERAPY (DPT) PROGRAM**

| SEMESTE R/YEAR                 | Course Code  | NAME OF SUBJECT          | CREDITS HRS |
|--------------------------------|--------------|--------------------------|-------------|
| <b>FIRST PROFESSIONAL YEAR</b> |              |                          |             |
| <b>FIRST</b>                   | DPAN114      | ANATOMY –I               | 4(3-1)      |
|                                | DPPH113      | PHYSIOLOGY-I             | 3(2-1)      |
|                                | DPKI113      | KINESIOLOGY-I            | 3(2-1)      |
|                                | DPEN113      | ENGLISH-I                | 3(3-0)      |
|                                | DPPS112      | PAKISTAN STUDIES         | 2(2-0)      |
|                                | DPCO113      | INTRODUCTION TO COMPUTER | 3(2-1)      |
|                                | <b>TOTAL</b> |                          |             |

|                                 |              |  |        |
|---------------------------------|--------------|--|--------|
| <b>SECOND</b>                   | DPAN124      | ANATOMY –II  | 4(3-1) |
|                                 | DPPH123      | PHYSIOLOGY-II  | 3(2-1) |
|                                 | DPKI123      | KINESIOLOGY-II                                       | 3(2-1) |
|                                 | DPEN123      | ENGLISH-II(Communication Skills)                     | 3(3-0) |
|                                 | DPIS112      | ISLAMIC STUDIES / ETHICS                             | 2(2-0) |
|                                 | DPSO112      | SOCIOLOGY  | 2(2-0) |
|                                 | <b>TOTAL</b> |  |        |
| <b>SECOND PROFESSIONAL YEAR</b> |              |  |        |
| <b>THIRD</b>                    | DPRN233      | ENGLISH-III(Technical Writing & Presentation Skills) | 3(3-0) |
|                                 | DPMP213      | MEDICAL PHYSICS                                      | 3(2-1) |
|                                 | DPAN233      | ANATOMY –III   | 3(2-1) |
|                                 | DPPH233      | PHYSIOLOGY-III                                       | 3(2-1) |
|                                 | DPBE213      | BIOMECHANICS & ERGONOMICS-I                          | 3(3-0) |
|                                 | DPBC212      | BIOCHEMISTRY I                                       | 2(2-0) |
|                                 | <b>TOTAL</b> |  |        |
| <b>FOURTH</b>                   | DPAN243      | ANATOMY –IV(Neuro Anatomy)                           | 3(2-1) |
|                                 | DPBE223      | BIOMECHANICS & ERGONOMICS-II                         | 3(2-1) |
|                                 | DPHW212      | HEALTH & WELNESS                                     | 2(2-0) |
|                                 | DPBC223      | BIOCHEMISTRY II                                      | 3(2-1) |
|                                 | DPEP243      | EXERCISE PHYSIOLOGY                                  | 3(2-1) |
|                                 | DPMB212      | MOLECULAR BIOLOGY & GENETICS                         | 2(2-0) |
|                                 | <b>TOTAL</b> |  |        |
| <b>THIRD PROFESSIONAL YEAR</b>  |              |  |        |
| <b>FIFTH</b>                    | DPPM312      | PATHOLOGY & MICROBIOLOGY I                           | 2(2-0) |
|                                 | DPPR312      | PHARMACOLOGY & THERAPEUTICS I                        | 2(2-0) |
|                                 | DPPE313      | PHYSICAL AGENTS & ELECTROTHERAPY –I                  | 3(2-1) |
|                                 | DPTE313      | THERAPEUTIC EXERCISES & TECHNIQUES I                 | 3(2-1) |
|                                 | DPBI313      | BIOSTATISTICS I                                      | 3(3-0) |
|                                 | DPBS312      | BEHAVIORAL SCIENCES (PSYCHOLOGY & ETHICS)            | 2(2-0) |
|                                 | DPPC313      | SUPERVISED CLINICAL PRACTICE I                       | 3(0-3) |
|                                 | <b>TOTAL</b> |  |        |
| <b>SIXTH</b>                    | DPPM323      | PATHOLOGY & MICROBIOLOGY II                          | 3(2-1) |
|                                 | DPPR322      | PHARMACOLOGY & THERAPEUTICS II                       | 2(2-0) |
|                                 | DPPE323      | PHYSICAL AGENTS & ELECTROTHERAPY –II                 | 3(2-1) |
|                                 | DPBI313      | BIOSTATISTICS II (university optional)               | 3(3-0) |

|                                 |              |  |           |
|---------------------------------|--------------|--|-----------|
|                                 | DPCM313      | COMMUNITY MEDICINE & REHABILITATION                        | 3(3-0)    |
|                                 | DPCP323      | SUPERVISED CLINICAL PRACTICE II                            | 3(0-3)    |
|                                 | <b>TOTAL</b> |  | <b>17</b> |
| <b>FOURTH PROFESSIONAL YEAR</b> |              |  |           |
| <b>SEVENTH</b>                  | DPME413      | MEDICINE I   | 3(3-0)    |
|                                 | DPSU413      | SURGERY I  | 3(3-0)    |
|                                 | DPRD413      | RADIOLOGY & DIAGNOSTIC IMAGING<br>-                        | 3(2-1)    |
|                                 | DPMU414      | MUSCULOSKELETAL<br>PHYSICAL THERAPY                        | 3(2-1)    |
|                                 | DPSE413      | EVIDENCE BASED PRACTICE                                    | 3(2-1)    |
|                                 | DPCP432      | SUPERVISED CLINICAL PRACTICE III                           | 3(0-3)    |
|                                 | <b>TOTAL</b> |  | <b>18</b> |
| <b>EIGHT</b>                    | DOME423      | MEDICINE II  | 3(3-0)    |
|                                 | DPSU423      | SURGERY II   | 3(3-0)    |
|                                 | DPNE414      | NEUROLOGICAL PHYSICAL THERAPY                              | 3(2-1)    |
|                                 | DPSI413      | SCIENTIFIC INQUIRY & RESEARCH<br>METHODOLOGY               | 3(2-1)    |
|                                 | DPEP413      | EMERGENCY PROCEDURES & PRIMARY<br>CARE IN PHYSICAL THERAPY | 3(2-1)    |
|                                 | DPCP442      | SUPERVISED CLINICAL PRACTICE IV                            | 3(0-3)    |
|                                 | <b>TOTAL</b> |  | <b>18</b> |
| <b>FIFTH PROFESSIONAL YEAR</b>  |              |  |           |
| <b>NINTH</b>                    | DPCA513      | CARDIOPULMONARY PHYSICAL<br>THERAPY                        | 3(2-1)    |
|                                 | DPMT513      | PROSTHETICS & ORTHOTICS                                    | 2(2-0)    |
|                                 | DPCD513      | CLINICAL DECISION MAKING &<br>DIFFERENTIAL DIAGNOSIS       | 3(3-0)    |
|                                 | DPMT513      | MANUAL THERAPY   | 3(2-1)    |
|                                 | DPPP512      | PROFESSIONAL PRACTICE<br>(LAWS , ETHICS, ADMINISTRATION)   | 2(2-0)    |
|                                 | DPIN512      | INTEGUMENTRY PHYSICAL THERAPY                              | 2(2-0)    |
|                                 | DPCP552      | SUPERVISED CLINICAL PRACTICE V                             | 3(0-3)    |
|                                 | <b>TOTAL</b> |  | <b>18</b> |
| <b>TENTH</b>                    | DPGO512      | OBSTETRICS & GYNAECOLOGICAL<br>PHYSICAL THERAPY            | 2(2-0)    |

|  |                      |  |            |
|--|----------------------|--|------------|
|  | DPPA512              | PAEDIATRIC PHYSICAL THERAPY              | 2(2-0)     |
|  | DPGE512              | GERONTOLOGY & GERIATRIC PHYSICAL THERAPY | 2(2-0)     |
|  | DPSP512              | SPORTS PHYSICAL THERAPY                  | 2(2-0)     |
|  | DPCP562              | SUPERVISED CLINICAL PRACTICE VI          | 4(0-4)     |
|  | DPRP516              | RESEARCH PROJECT                         | 6          |
|  | <b>TOTAL</b>         |  | <b>18</b>  |
|  | <b>TOTAL CREDITS</b> |  | <b>174</b> |

### Courses Information

#### FIRST SEMESTER

1. ANATOMY -I
2. PHYSIOLOGY-I
3. KINESIOLOGY-I
4. ENGLISH-I (FUNCTIONAL ENGLISH)
5. PAKISTAN STUDIES
6. INTRODUCTION TO COMPUTER

#### DETAILS OF COURSES

##### ANATOMY-I

CREDIT HOURS 4(3-1)

##### Course Description:

The focus of this course is an in-depth study and analysis of the general and regional organization of the human body. Emphasis is placed upon structure and function of human movement. A comprehensive study of human anatomy histology, embryology, with emphasis on the nervous, musculoskeletal, and circulatory systems is incorporated. Introduction to general anatomy lays the foundation of the course. Dissection and identification of structures in the cadaver supplemented with the study of charts, models, prospected materials and radiographs are utilized to identify anatomical landmarks and configurations of the upper limb.

## **LEARNING OBJECTIVES**

- Define basic technical terminology and language associated with anatomy
- Describe the structure, composition and functions of the organs in the human body
- Comprehend the concepts (& associated principles) for each general type of anatomical structures
- Demonstrate skills in the surface markings of clinically important structures, on normal living bodies and the correlation of structure with function
- Describe concepts of embryology and histology
- Identify histological slides of the human body
- Describe the interdependency and interactions of the structural and functional components of upper limb

## **GENERAL ANATOMY AND FUNCTIONAL ANATOMY**

- Terms related to position and movements
- The skin and subcutaneous tissues
- Layers of skin
- Integuments of skin
- Glands associated with hair follicle
- Microscopic picture of skin

## **BONES AND CARTILAGES**

- Osteology
- Functions of Bones
- Classification of bones
- Parts of developing long bones
- Blood supply of bones
- Lymphatic vessels & nerve supply
- Rule of direction of nutrient foramen
- Gross structure of long bone
- Surface marking
- Cartilage
- Development of bone and cartilage
- Microscopic picture of cartilage and bone

## **THE MUSCLE**

- Introduction
- Classification
- Histological Classification
- Functions of muscles in general
- Type of skeletal muscles
- Parts of skeletal muscle and their action
- Nomenclature.
- Microscopic picture of muscle

## **STRUCTURES RELATED TO MUSCLES & BONES**

- Tendons
- Aponeurosis
- Fasciae
- Synovial bursae
- Tendon Synovial sheaths
- Raphaes
- Ligaments
- Condyle

- Epicondyle
- Ridge
- Tuberosity
- Tubercle
- Foramen
- Canal
- Groove
- Process
- Spur

## **THE JOINTS**

- Introduction
- Functional classification
- Structural classification
- Structures comprising a Synovial joint
- Movements of joints
- Blood supply of Synovial joints, their nerve supply and lymphatic drainage
- Factors responsible for joint stability
- Development of joints

## **CARDIOVASCULAR SYSTEM**

- Definition
- Division of circulatory system into pulmonary & systemic
- Classification of blood vessels and their microscopic picture
- Heart and its histology
- Function of the Heart
- Anastomosis

## **NERVOUS SYSTEM**

- Definition
- Outline of cellular architecture
- Classification of nervous system
- Parts of the central nervous system
- Microscopic picture of cerebrum, cerebellum, spinal cord
- Functional components of nerve
- Typical spinal nerve
- Microscopic picture of nerve
- Introduction of autonomic nervous system
- Anatomy of neuromuscular junction

## **GENERAL HISTOLOGY**

- Cell
- Epithelium
- Connective tissue
- Bone
- Muscle tissue
- Nerve tissues
- Blood vessels
- Skin and appendages
- Lymphatic organs

### **GENERAL EMBRYOLOGY**

- Male and female reproductive organs
- Cell division and Gametogenesis
- Fertilization, cleavage, blastocyte formation and implantation of the embryo. Stages of early embryonic development in second and third week of intrauterine life
- Foetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and Placenta)
- Developmental defects

### **UPPER LIMB OSTEOLOGY**

- Detailed description of all bones of upper limb and shoulder girdle along their musculature and ligamentous attachments.

### **MYOLOGY**

- Muscles connecting upper limb to the axial skeletal
- Muscles around shoulder joint
- Walls and contents of axilla
- Muscles in brachial region
- Muscles of forearm
- Muscles of hand
- Retinacula
- Palmar apouenrosis
- Flexor tendon dorsal digital expansion

### **LAB WORK**

During study of this course, emphasis should be given on applied aspects, practical histology, radiological anatomy, surface anatomy and cross-sectional anatomy of the region covered in the respective semester /year

### **NEUROLOGY**

- Course, distribution and functions of all nerves of upper limb
- Brachial plexus

### **ANGIOLOGY (CIRCULATION)**

- Course and distribution of all arteries and veins of upper limb
- Lymphatic drainage of the upper limb
- Axillary lymph node
- Cubital fossa

### **ARTHROLOGY**

- Acromioclavicular and sternoclavicular joints
- Shoulder joint
- Elbow joint
- Wrist joint
- Radioulnar joints
- Inter carpal joints
- Joints MCP and IP
- Surface anatomy of upper limb
- Surface marking of upper limb

### **DEMONSTRATION**

- Shoulder joint, attached muscles and articulating surfaces
- Elbow joint
- Wrist joint
- Radioulnar joint
- MCP and IP joints
- Acromioclavicular joint
- Sternoclavicular joint
- Brachial plexus
- Blood supply of brain
- Structure of bones

**Note**

The students are expected to make a practical note book. The book is a collection of evidence that learning has taken place. It is a reflective record of their achievements. The practical note book shall contain a record of the surface landmarks and cross-sectional views of parts which student would have observed

**RECOMMENDED BOOKS**

1. *Gray's Anatomy by Prof. Susan Standing 41<sup>st</sup> Ed., Elsevier.*
2. *Clinical Anatomy for Medical Students by Richard S. Snell.*
3. *Clinically Oriented Anatomy by Keith Moore.*
4. *General Anatomy by Prof.*
5. *Ghulam Ahmad, latest Ed.*
6. *Clinical Anatomy by R. J. Last, Latest Ed.*
7. *Cunningham's Manual of Practical Anatomy by G. J. Romanes, 15th Ed., Vol-I, II and III.*
8. *The Developing Human. Clinically Oriented Embryology by Keith L. Moore, 6<sup>th</sup> Ed. Ed.*
9. *Wheater's Functional Histology by Young and Heath, Latest Ed.*
10. *Medical Histology by Prof. Laiq Hussain.*
11. *Neuroanatomy by Richard S. Snell 7<sup>th</sup> edition.*
12. *Jancquera textbook of histology*
13. *Colour atlas of histology by defiero*
14. *Langman`s embryology*
15. *Clinicaly oriented developmental anatomy by k.l.moore*

**PHYSIOLOGY- I**

**CREDIT HOUR 3(2-1)**

**Course Description:**

**COURSE DESCRIPTION**

The course is designed to study the function of the human body at the cellular, tissue and systems levels. The course will help students in understanding the complexities of the cells, tissues, and major organs and systems of the human body, concentrating on basic mechanisms underlying human life processes and important diseases affecting normal human function

**LEARNING OBJECTIVES**

- Define the terminology related to the structure and function of the human body systems
- Compare and contrast the structural and functional characteristics of the various human body cells
- Describe basic chemical concepts and principles as they apply to the structure and functioning of the blood and neuromuscular system
- Analyze the interrelationships of body organ systems, homeostasis, and the complementarity of structure and functioning of the blood and neuromuscular system



- Demonstrate advance techniques to investigate the body and interpret data to be used for diagnosis and treatment
- Define the principles behind medical instrumentation and their usage

## **COURSE CONTENTS**

### **CELL PHYSIOLOGY**

- Functional organization of human body
- Homeostasis
- Control systems in the body
- Cell membrane and its functions
- Cell organelles and their functions
- Genes: control and function

### **NERVE AND MUSCLE**

- Structure and function of neuron
- Physiological properties of nerve fibers
- Action potential
- Conduction of nerve impulse
- Nerve degeneration and regeneration
- Synapses
- Physiological structure of muscle
- Skeletal muscle contraction
- Skeletal, smooth and cardiac muscle contraction
- Neuromuscular junction and transmission
- Excitation contraction coupling
- Structure and function of motor unit

### **BLOOD COMPOSITION AND GENERAL FUNCTIONS OF BLOOD**

- Plasma proteins their production and function
- Erythropoiesis and red blood cell function
- Structure, function, production and different types of haemoglobin

- Iron absorption storage and metabolism
- Blood indices, Function, production and type of white blood cells
- Function and production of platelets
- Clotting mechanism of blood
- Blood groups and their role in blood transfusion Complications of blood transfusion with reference to ABO & RH incompatibility
- Components of reticuloendothelial systems, gross and microscopic structure including tonsil, lymph node and spleen
- Development and function of reticuloendothelial system

### **LAB WORK**

- Use of the microscope
- Determination of haemoglobin
- Determination of erythrocyte sedimentation rate
- Determining packed cell volume
- Measuring bleeding and clotting time
- RBC count
- Red cell indices
- WBC count
- Leukocyte count
- Prothrombin and thrombin time.
- Blood indices in various disorders
- Clotting disorders
- Blood grouping and cross matching

### **Note**

The students are expected to make a practical note book. The book is a collection of evidence that learning has taken place. It is a reflective record of their achievements

**RECOMMENDED TEXT BOOKS:**

1. *Textbook of Physiology by Guyton and Hall, 12<sup>th</sup> Ed.*
2. *Review of Medical Physiology by William F. Ganong, 23<sup>rd</sup> Ed.*
3. *Physiology by Berne and Levy, 6<sup>th</sup> Ed.*
4. *Human Physiology: The Basis of Medicine by Gillian Pocock, Christopher D.Richards 4<sup>th</sup> Ed.*
5. *Physiological Basis of Medical Practice by John B. West and Taylor, 12<sup>th</sup> Ed.*

**KINESIOLOGY I**

**CREDITS 3(2-1)**

**COURSE DESCRIPTION**

Course covers the principles of mechanics and anatomy in relation to human movement facilitating students to apply kinesiological evaluation and treatment of muscular imbalance or derangement in their clinical practice. It consists of evaluation of muscular function and group movements of muscle in relation to force of gravity and manual resistance. By becoming familiar with the knowledge of basic mechanical and physiological mechanisms, students will be more confident and competent in using them in use of exercises to promote physical rehabilitation

**LEARNING OBJECTIVES**

- Define the mechanical principles and their application on the human body
- Describe concept of movement and how it occurs in body
- Demonstrate fundament position, their effects and uses
- Explore fundamental skills to differentiate between a good and bad posture and to use technique for re-education
- Develop critical thinking ability in students on how and why to select which technique in a specific case, suitable for its rehabilitation
- Describe muscular anatomy, its function against gravity and manual resistance

**COURSE CONTENTS**

**INTRODUCTION TO KINESIOLOGY**

- Definition of Physical Therapy and Rehabilitation
- Definition of kinesiology

**MECHANICS**

- Mechanical Principles and Mechanics of Position
- Force - force system – Description of units
- Gravity: Center of gravity and line of gravity
- Level of gravity
- Equilibrium

- Fixation and Stabilization
- Mechanics of movement
- Axes / Planes
- Speed
- Velocity
- Acceleration
- Momentum
- Inertia
- Friction
- Lever - types – application in human body
- Pulley - types – application in human body
- Angle of pull

## **INTRODUCTION TO MOVEMENT**

- Types of movement and posture
- Patterns of movement
- Timing in movement
- Rhythm of movement
- The nervous control of movement

## **STARTING POSITIONS**

- Definition
- Fundamental positions
- Standing
- Kneeling
- Sitting
- Lying
- Hanging
- The pelvic tilt

## **POSTURE**

- Inactive postures
- Active postures
- The postural mechanism
- The pattern of posture
- Principles of Re- Education
- Techniques of Re-Education
- Prevention of muscles wasting
- The initiation of muscular contraction
- Abnormal postures

## **Note**

The students are expected to make a practical note book. The practical note book is a collection of evidence that learning has taken place and also a reflective record of student's achievements

## **MUSCLE STRENGTH AND MUSCLE ACTION**

- Types of Muscles contraction
- Muscles tone
- Physiological application to postural tone
- Group action of muscles
- Overview of muscle structure
- Types of muscle work
- Range of muscle work
- Two joint muscle work
- Active and passive insufficiency
- Group movement of joints
- Muscular weakness and paralysis

## **LAB WORK**

- Fundamentals of muscle testing
- Methods of muscle recording
- Basic muscle grading system
- Evaluation of posture
- Regional upper limb muscle testing
- Practical demonstrations of muscles work and its ranges
- Practical demonstrations of various fundamental positions and posture analysis.

## **RECOMMENDED BOOKS**

1. *Practical exercise therapy by Margaret Hollis 3<sup>rd</sup> Ed. illustrated, reprint, Blackwell Scientific*
2. *Brunnstrom's Clinical Kinesiology 6<sup>th</sup> Ed. By. Peggy A Houglum, Dolores B Bertoti*
3. *Clinical kinesiology and anatomy 5<sup>th</sup> Ed. by Lynn S Lippert*
4. *Joint structure and function: a comprehensive analysis 5<sup>th</sup> Ed. by: Pamela. K. Levangie and Cynthia. C. Norkin.*
5. *Muscle function testing by: Cunningham and Daniel. 2nd, illustrated*
6. *Human movement explain by kimjonas and karenbaker*

7. *The principles of exercise therapy* by: M. Dena Gardiner, 4<sup>th</sup> Edition.

## **ENGLISH I (FUNCTIONAL ENGLISH)**

**CREDIT 3(3-0)**

### **COURSE OBJECTIVES**

- Enhance language skills and develop critical thinking

### **COURSE CONTENTS**

- Basics of Grammar
- Parts of speech and use of articles
- Sentence structure, active and passive voice
- Practice in unified sentence
- Analysis of phrase, clause and sentence structure
- Transitive and intransitive verbs
- Punctuation and spelling.

be at the discretion of the teacher keeping in view the level of students)

### **LISTENING**

- To be improved by showing documentaries/films carefully selected by subject teachers

### **TRANSLATION SKILLS**

- Urdu to English Paragraph writing

### **COMPREHENSION**

- Answers to questions on a given text

### **DISCUSSION**

- General topics and every-day conversation (topics for discussion to

Topics to be chosen at the discretion of the teacher  
**Presentation skills**

- Introduction

### **Note**

Extensive reading is required for vocabulary building

## **RECOMMENDED BOOKS**

### ***Functional English Grammar***

1. *Practical English Grammar* by A. J. Thomson and A. V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN 0194313492
2. *Practical English Grammar* by A. J. Thomson and A. V. Martinet. Exercises 2. Third edition. Oxford University Press. 1997. ISBN 0194313506

### ***Writing***

1. *Writing. Intermediate* by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41.
2. *Reading/Comprehension*
3. *Reading. Upper Intermediate.* Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2.
4. *Speaking.*

**PAKISTAN STUDIES (COMPULSORY)**

**CREDIT HOURS 2(2-0)**

**COURSE OBJECTIVES**

- Develop vision of historical perspective, government, politics, Contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

**COURSE CONTENTS**

**HISTORICAL PERSPECTIVE**

- Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-e-Azam Muhammad Ali Jinnah
- Factors leading to Muslim separatism

**PEOPLE AND LAND**

- Indus Civilization • Muslim advent
- Location and geo-physical features

**GOVERNMENT AND POLITICS IN PAKISTAN**

- 1947-58

- 1958-71
- 1971-77
- 1977-88
- 1988-99
- 1999 onward

**CONTEMPORARY PAKISTAN**

- Economic institutions and issues
- Society and social structure
- Ethnicity
- Foreign policy of Pakistan and challenges
- Futuristic outlook of Pakistan

**RECOMMENDED BOOKS**

1. *Burki, Shahid Javed. State & Society in Pakistan, The Macmillan Press Ltd 1980.*
2. *Akbar, S. Zaidi. Issue in Pakistan's Economy. Karachi: Oxford University Press, 2000.*
3. *S. M. Burke and Lawrence Ziring. Pakistan's Foreign policy: An Historical analysis. Karachi: Oxford University Press, 1993.*
4. *Mehmood, Safdar. Pakistan Political Roots & Development. Lahore, 1994.*
5. *Wilcox, Wayne. The Emergence of Bangladesh., Washington: American Enterprise, Institute of Public Policy Research, 1972.*
6. *Mehmood, Safdar. Pakistan Kayyun Toota, Lahore: Idara-e-Saqafat-e-Islamia, Club Road, nd.*
7. *Amin, Tahir. Ethno - National Movement in Pakistan, Islamabad: Institute of Policy Studies, Islamabad.*
8. *Ziring, Lawrence. Enigma of Political Development. Kent England: Wm Dawson & sons Ltd, 1980.*
9. *Zahid, Ansar. History & Culture of Sindh. Karachi: Royal Book Company, 1980.*
10. *Afzal, M. Rafique. Political Parties in Pakistan, Vol. I, II & III. Islamabad: National Institute of Historical and cultural Research, 1998.*

11. Sayeed, Khalid Bin. *The Political System of Pakistan*. Boston: Houghton Mifflin, 1967.
12. Aziz, K.K. *Party, Politics in Pakistan*, Islamabad: National Commission on Historical and Cultural Research, 1976.
13. Muhammad Waseem, *Pakistan under Martial Law*, Lahore: Vanguard, 1987.
14. Haq, Noor ul. *Making of Pakistan: The Military Perspective*. Islamabad: National Commission on Historical and Cultural Research, 1993.

## **INTRODUCTION TO COMPUTERS CREDIT HOURS: 3(2-1)**

### **COURSE DESCRIPTION**

- This is an introductory course on Information and Communication Technologies. Topics include ICT terminologies, hardware and software components, the internet and World Wide Web, and ICT based applications

### **COURSE CONTENTS**

- Basic Definitions & Concepts
- Hardware: Computer Systems & Components
- Storage Devices , Number Systems
- Software: Operating Systems, Programming and Application Software
- Introduction to Programming, Databases and Information Systems
- Networks
- Data Communication
- The Internet, Browsers and Search Engines
- The Internet: Email, Collaborative Computing and Social Networking
- The Internet: E-Commerce
- IT Security and other issues
- Project Week
- Review Week

### **RECOMMENDED BOOKS**

1. *Introduction to Computers by Peter Norton, 6th International Edition (McGraw HILL)*
2. *Using Information Technology: A Practical Introduction to Computer & Communications by Williams Sawyer, 6th Edition (McGraw HILL)*
3. *Computers, Communications & information: A user's introduction by Sarah E. Hutchinson, Stacey C. Swayer*
4. *Fundamentals of Information Technology by Alexis Leon, Mathewsleon Leon press*

## **SECOND SEMESTER**

### **1. ANATOMY -II**

2. **PHYSIOLOGY-II**
3. **KINESIOLOGY-II**
4. **ENGLISH-II**
5. **ISLAMIC STUDIES / ETHICS**
6. **BIostatISTICS-II/ UNIVERSITY OPTIONAL**

## **ANATOMY II**

**CREDITS 4(3-1)**

### **COURSE DESCRIPTION**

The focus of this course is an in-depth study and analysis of the regional and systemic organization of the body. Emphasis is placed upon structure and function of human movement. A comprehensive study of human anatomy with emphasis on the nervous, musculoskeletal and circulatory systems is incorporated. Introduction to general anatomy lays the foundation of the course. Dissection and identification of structures in manikins/smart board systems supplemented with the study of charts, models, prosected materials and radiographs are utilized to identify anatomical landmarks and configurations of the lower limb, abdomen and pelvis

### **LEARNING OBJECTIVES**

- Describe gross anatomy of neuro-musculoskeletal and circulatory system of lower limb, abdominal wall and pelvis.
- Demonstrate anatomical landmarks and configuration of the lower limb, abdominal wall and pelvis through dissection/identification of structures in the manikins / smart board systems supplemented with the study of charts, models, prosected materials, and radiographs.
- Describe major stages of embryological development of the lower limb with development of the neurological and vascular supplies to the lower limb.

### **COURSE CONTENTS**

#### **LOWER LIMB OSTEOLOGY**

- Detailed description of all bones of lower limb and pelvis along with their markings

#### **MYOLOGY**

- Muscles of gluteal region
- Muscles around hip joint
- Muscles of thigh
- Muscles of lower leg and foot

#### **NEUROLOGY**

- Course, distribution, supply of all nerves of lower limb and gluteal region
- Lumbosacral plexus

#### **ANGIOLOGY**

- Course and distribution of all arteries, veins and lymphatic drainage of lower limb

#### **ARTHROLOGY**

- Pelvis
- Hip joint
- Knee joint
- Ankle joint
- Joints of the foot
- Surface Anatomy of lower limb
- Surface Marking of lower limb

#### **ABDOMEN**

### **ABDOMINAL WALL**

- Structures of anterior abdominal wall: superficial and deep muscles
- Structure of rectus sheath
- Structures of Posterior abdominal wall
- Lumbar spine (vertebrae)
- Brief description of viscera

### **PELVIS**

- Brief description of anterior, posterior and lateral walls of the pelvis
- system and Nervous system

- Inferior pelvic wall or pelvic floor muscles
- Sacrum
- Brief description of perineum
- Nerves of perineum

### **EMBRYOLOGY**

- Introduction to developing human
- Gametogenesis, Spermatogenesis, Oogenesis
- Fertilization and phases of fertilization
- Germ layers
- Development of limbs, Muscular

### **LAB WORK**

During study of Gross Anatomy, emphasis should be given on applied aspect, radiological anatomy, surface anatomy and cross-sectional anatomy of the region covered in the respective semester /year.

### **Note**

The students are expected to make a practical note book. The book is a collection of evidence that learning has taken place. It is a reflective record of their achievements

### **RECOMMENDED BOOKS**

1. *Gray's Anatomy by Prof. Susan Standing 41<sup>st</sup> Ed., Elsevier.*
2. *Clinical Anatomy for Medical Students by Richard S. Snell.*
3. *Clinically Oriented Anatomy by Keith Moore.*
4. *General Anatomy by Prof. Ghulam Ahmad, latest Ed.*
5. *Clinical Anatomy by R. J. Last, Latest Ed.*
6. *Cunningham's Manual of Practical Anatomy by G. J. Romanes, 15th Ed., Vol-I, II and III.*
7. *The Developing Human. Clinically Oriented Embryology by Keith L. Moore, 6th Ed.*
8. *Wheater's Functional Histology by Young and Heath, Latest Ed.*
9. *Medical Histology by Prof. Laiq Hussain.*
10. *Neuroanatomy by Richard S. Snell 7<sup>th</sup> edition.*
11. *Jancquera textbook of histology*
12. *Colour atlas of histology by defiero*
13. *Langman's embryology*
14. *Clinicaly oriented developmental anatomy by k.l.moore*

## **PHYSIOLOGY II**

**CREDITS 3(2-1)**

### **COURSE DESCRIPTION**



The course is designed to study the function of the human body at the molecular, cellular, tissue and systems levels. These topics are addressed by a consideration of the cardiovascular, gastrointestinal, and endocrinological systems. The integrative nature of physiological responses in normal function and disease is stressed throughout the course

### **LEARNING OBJECTIVES**

- Describe functions of gastrointestinal tract, endocrinology and cardiovascular system
- Describe physiology at the molecular, metabolic/cellular, tissue and systems levels
- Differentiate the physiological responses in normal function and disease stages

### **COURSE CONTENTS**

#### **GASTROINTESTINAL TRACT**

- General function of gastrointestinal tract
- Enteric nervous system
- Control of gastrointestinal mobility and secretions
- Mastication
- Swallowing: mechanism and control
- Function, motility and secretions of stomach
- Function, motility and secretions of small intestine
- Function, motility and secretions of large intestine
- Function of GIT hormones
- Mechanism of vomiting and its control pathway
- Defecation and its control pathway
- Functions of liver
- Functions of, gallbladder and bile in digestion
- Endocrine & exocrine pancreas and functions of pancreas in digestion
- Dysphagia
- Physiological basis of acid peptic disease

#### **CARDIOVASCULAR SYSTEM**

- Heart and circulation
- Function of cardiac muscle

- Cardiac pacemaker and cardiac muscle contraction
- Cardiac cycle
- ECG: recording and interpretation
- Common arrhythmias
- Types of blood vessels and their function
- Haemodynamics of blood flow (local control systemic circulation its regulation and control). Peripheral resistance its regulation and effect on circulation
- Arterial pulse
- Blood pressure and its regulation
- Cardiac output and its control
- Heart sounds and murmurs Importance in circulation and control of venous return.
- Coronary circulation
- Splanchnic, pulmonary and cerebral circulation
- Triple response and cutaneous circulation

#### **ENDOCRINOLOGY**

- Classification of endocrine glands
- Mechanism of action
- Feedback and control of hormonal secretion
- Functions of the hypothalamus

- Hormones secreted by the anterior and posterior pituitary and their mechanism of action and function.
- Function of the thyroid gland
- Function of the parathyroid gland
- Calcium metabolism and its regulation
- Secretion and function of calcitonin
- Hormones secreted by the adrenal cortex and medulla, and their function and mechanism of action
- Endocrine functions of the pancreas and control of blood sugar
- The endocrine functions of the kidney and Physiology of growth.

### **LAB WORK**

- Clinical significance of cardiac cycle, correlation of ECG and heart sounds
- Examination of arterial pulses
- Arterial blood pressure
- Effects of exercise and posture on blood pressure
- Cardiopulmonary resuscitation (to be coordinated with the department of medicine)

### **Note**

The students are expected to make a sketch book. The sketch book is a collection of evidence that learning has taken place. It is a reflective record of achievements

### **RECOMMENDED BOOKS**

1. *Textbook of Physiology by Guyton and Hall, 12<sup>th</sup> Ed.*
2. *Review of Medical Physiology by William F. Ganong, 23<sup>rd</sup> Ed.*
3. *Physiology by Berne and Levy, 6th Ed.*
4. *Human Physiology: The Basis of Medicine by Gillian Pocock, Christopher D.Richards 4<sup>th</sup> Ed.*
5. *Physiological Basis of Medical Practice by John B. West and Taylor, 12th Ed.*

## **KINSIOLOGY II**

**CREDITS 3(2-1)**

### **COURSE DESCRIPTION**

The course covers the types of human motions in relation to axes and planes. It further explores the inter-relationship among kinematic variables and motion analysis

### **LEARNING OBJECTIVES**

- Describe the ROM and types of movements & exercises.
- Differentiate among agonists, antagonists, and synergists integrating the knowledge learned with human motion occurring during daily activities.
- Demonstrate relaxation techniques, derived positions and effective use of walking aids.
- Demonstrate coordinated and incoordinated movements

### **COURSE CONTENTS**

## **TYPES OF MOVEMENT & EXERCISES**

- Voluntary & involuntary movements
- Active and Passive movements
- Classification & techniques of free exercises
- The principles, techniques and effects of assisted exercises
- The principles, techniques and effects of assisted resisted exercises
- The principles, types, techniques and effects of resisted exercises
- Variation of the power of the muscles in different parts of their range
- Progressive Resistance Exercise
- Reflex movement
- The reflex arc
- The stretch reflex
- The righting reflexes
- The postural reflexes
- Effects and uses of reflex movement

## **PASSIVE MOVEMENT**

- The principles, types, techniques and effects of passive exercises
- Definition of Passive manual mobilization and manipulations
- Controlled sustained stretching, Principles and Effects and uses

## **RELAXATION**

- Definition
- Muscle tone
- Postural tone
- Voluntary movement
- Mental attitudes
- Degrees of relaxation
- Pathological tension in the muscles
- Technique
- General relaxation
- Local relaxation

## **LAB WORK**

## **DERIVED POSITIONS**

- Purpose of derived positions
- Positions derived from standing by: alteration of arms, legs and trunk.
- Positions derived from kneeling
- Positions derived from sitting by: alteration of the legs& by alteration of trunk
- Positions derived from lying, by alteration of arms and by alteration of the legs
- Positions derived from hanging
- Other positions in which some of the weight is taken on the arms

## **SUSPENSION THERAPY**

- Suspension application
- Suspension concept of inclined planes
- The fixed point suspension
- Supporting rope and its types
- Sling and its types
- Type of suspension: axial & vertical
- Methods, techniques of suspension: upper limb & lower limb
- Suspension effect on muscle work and joint mobility

## **NEUROMUSCULAR CO-ORDINATION**

- Coordinated movement
- Group action of muscles
- Nervous control
- Inco-ordination
- Re-Education
- Frenkel's exercises.

## **WALKING AIDS**

- Crutches
- Sticks
- Tripod or Quadra pod
- Frames

- Demonstrations of the techniques of active, passive movements
- Demonstrations of relaxation procedures
- Demonstrations of various derived positions
- PRE program
- Manual muscle testing - Regional Lower limb muscle testing

### Note

The students are expected to make a practical note book. The book is a collection of evidence that learning has taken place. It is a reflective record of their achievements

### RECOMMENDED BOOKS

1. *Practical exercise therapy* by Margaret Hollis 3<sup>rd</sup> Ed. illustrated, reprint, Blackwell Scientific
2. *Brunnstrom's Clinical Kinesiology* 6<sup>th</sup> Ed. By. Peggy A Houglum, Dolores B Bertoti
3. *Clinical kinesiology and anatomy* 5<sup>th</sup> Ed. by Lynn S Lippert
4. *Joint structure and function: a comprehensive analysis* 5<sup>th</sup> Ed. by: Pamela. K. Levangie and Cynthia. C. Norkin.
5. *Muscle function testing* by: Cunningham and Daniel. 2nd, illustrated
6. *Human movement explain* by kimjonas and karenbaker
7. *The principles of exercise therapy* by: M. Dena Gardiner, 4<sup>th</sup> Edition.

### ENGLISH II (COMMUNICATION SKILLS)CREDIT HOURS 3(3-0)

#### Objectives

- Enable the students to meet their real life communication needs.

#### Course Contents

##### Paragraph writing

- Practice in writing a good, unified and coherent paragraph

##### Essay writing

- Introduction

##### CV and job application

- Translation skills
- Urdu to English

##### Study skills

- Skimming and scanning, intensive and extensive, and speed reading, summary and précis writing and comprehension

##### Academic skills

- Letter/memo writing, minutes of meetings, use of library and internet

##### Presentation skills

- Personality development (emphasis on content, style and pronunciation)

**Note:** documentaries to be shown for discussion and review

**Recommended books:**

**Communication Skills**

a) Grammar

1. *Practical English Grammar* by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 431350 6.

b) Writing

1. *Writing. Intermediate* by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 019 435405 7 Pages 45-53 (note taking).
2. *Writing. Upper-Intermediate* by Rob Nolasco. Oxford Supplementary Skills. Fourth Impression 1992. ISBN 0 19 435406 5 (particularly good for writing memos, introduction to presentations, descriptive and argumentative writing).

c) Reading

1. *Reading. Advanced.* Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 453403 0.
2. *Reading and Study Skills* by John Langan
3. *Study Skills* by Richard Yorky.

**ISLAMIC STUDIES / ETHICS**

**CREDIT HOURS 2(2-0)**

**COURSE OBJECTIVES**

- To provide Basic information about Islamic Studies
- To enhance understanding of the students regarding Islamic Civilization
- To improve Students skill to perform prayers and other worships
- To enhance the skill of the students for understanding of issues related to faith and religious life

**COURSE CONTENTS**

**INTRODUCTION TO QURANIC STUDIES**

- Basic Concepts of Quran
- History of Quran
- Uloom-ul –Quran.

- Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77)
- Verses of Surah Al-Inam Related to Ihkam (Verse No-152-154).

**STUDY OF SELECTED TEXT OF HOLLY QURAN**

- Verses of Surah Al-Baqra Related to Faith (Verse No-284-286)
- Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No-1-18)
- Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11)

**STUDY OF SELECTED TEXT OF HOLLY QURAN**

- Verses of Surah Al-Ihzab Related to Adab al-Nabi (Verse No.6,21,40,56,57,58)
- Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment
- Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No-1,14).

## **SEERAT OF HOLY PROPHET (S.A.W)**

I

- Life of Muhammad Bin Abdullah (Before Prophet Hood)
- Life of Holy Prophet (S.A.W) in Makkah
- Important Lessons derived from the life of Holy Prophet in Makkah.

## **SEERAT OF HOLY PROPHET (S.A.W) II**

- Life of Holy Prophet (S.A.W) in Madina
- Important Events of Life Holy Prophet in Madina
- Important Lessons derived from the life of Holy Prophet in Madina.

## **INTRODUCTION TO SUNNAH**

- Basic Concepts of Hadith
- History of Hadith
- Kinds of Hadith
- Uloom-ul-Hadith
- Sunnah & Hadith
- Legal Position of Sunnah.

## **SELECTED STUDY FROM TEXT OF HADITH**

## **INTRODUCTION TO ISLAMIC LAW & JURISPRUDENCE**

- Basic Concepts of Islamic Law & Jurisprudence
- History & Importance of Islamic Law & Jurisprudence
- Sources of Islamic Law & Jurisprudence
- Nature of Differences in Islamic Law
- Islam and Sectarianism.

## **ISLAMIC CULTURE & CIVILIZATION**

### **RECOMMENDED BOOKS**

1. *Hameed ullah Muhammad, "Emergence of Islam" , IRI, Islamabad*
2. *Hameed ullah Muhammad, "Muslim Conduct of State"*
3. *Hameed ullah Muhammad, "Introduction to Islam"*

- Basic Concepts of Islamic Culture & Civilization
- Historical Development of Islamic Culture & Civilization
- Characteristics of Islamic Culture & Civilization
- Islamic Culture & Civilization and Contemporary Issues.

## **ISLAM & SCIENCE**

- Basic Concepts of Islam & Science
- Contributions of Muslims in the Development of Science
- Quranic & Science.

## **ISLAMIC ECONOMIC SYSTEM**

- Basic Concepts of Islamic Economic System
- Means of Distribution of wealth in Islamic Economics
- Islamic Concept of Riba
- Islamic Ways of Trade & Commerce.

## **POLITICAL SYSTEM OF ISLAM**

- Basic Concepts of Islamic Political System
- Islamic Concept of Sovereignty
- Basic Institutions of Govt. in Islam.

## **ISLAMIC HISTORY**

- Period of Khlaft-E-Rashida
- Period of Umayyads
- Period of Abbasids

## **SOCIAL SYSTEM OF ISLAM**

- Basic Concepts of Social System of Islam
- Elements of Family
- Ethical Values of Islam.

4. *Mulana Muhammad YousafIslahi,"*
5. *Hussain Hamid Hassan, "An Introduction to the Study of Islamic Law" leaf Publication Islamabad, Pakistan.*
6. *Ahmad Hasan, "Principles of Islamic Jurisprudence" Islamic Research Institute, International Islamic University, Islamabad (1993)*
7. *Mir Waliullah, "Muslim Jrisprudence and the Quranic Law of Crimes" Islamic Book Service (1982)*
8. *H. S. Bhatia, "Studies in Islamic Law, Religion and Society" Deep & Deep Publications, New Delhi (1989)*
9. *Dr. Muhammad Zia-ul-Haq, "Introduction to Al Sharia Al Islamia" Allama Iqbal Open University, Islamabad (2001)*

## **SOCIOLOGY**

**CREDIT HOURS: 2(2-0)**

### **COURSE DESCRIPTION**

The course focuses at providing basic concepts and models of health sciences. The psycho-socio and cultural assessment of health seeking behavioral patterns and the role of therapeutic management group will be examined. The indigenous healing system and contemporary medical system will be studied. It makes them realize the importance of the relationship of the physical therapist and the patient

### **LEARNING OBJECTIVES**

- Comprehend basic knowledge and concepts of sociology
- Describe relationship among impact of group, culture and environment on the behavior and health of patients
- Describe social aspects of health & illness and emphasize importance of the relationship of the physical therapist with patient, along critical perspectives of contemporary issues in health

### **COURSE CONTENTS**

#### **INTRODUCTION**

- Medical Sociology, and the field of medical sociology
- Contribution of sociology to medicine.

- Interactionist Approach
- Labeling Approach

#### **HEALTH AND DISEASE**

- Social definition of illness
- Health and disease as deviant behavior
- Social cultural causes of disease

#### **ILLNESS BEHAVIOR AND PERCEPTIONS OF ILLNESS**

- Illness Behavior
- Cultural Influences on Illness Behavior
- Sociological and Demographic Influences
- Lay Beliefs About Health and Illness
- Self medication
- Sick Role

#### **SOCIOLOGICAL PERSPECTIVES ON HEALTH & ILLNESS**

- Functionalist Approach
- Conflict Approach

#### **SOCIAL DETERMINANTS OF HEALTH**

- The Social Gradient

- Stress
- Early Life
- Life Expectancy
- Social support networks
- Education and literacy
- Employment/Working conditions
- Social environments
- Addiction
- Food
- Transport

#### **PATIENT AND PHYSICAL THERAPIST**

- Physical Therapist's view of disease and the patient
- & alternative Medicine (CAM)

- Patient's perspective of illness
- Patient Physical Therapist relationship
- Patient-nurses relation

#### **SOCIOLOGY OF MEDICAL CARE**

- Hospitals
- Origin and development.
- Hospitals as social organization: problems of Quackery.
- Interpersonal relationship in medical settings.
- Mental illness in sociological perspective.
- Complementary

#### **RECOMMENDED BOOKS**

1. *Sociology for Physiotherapists(2006) by Bid Dibyendunarayan Jaypee publisher*
2. *A.P Dixit (2005) Global Hiv/Aids Trends, Vista International Publications house New Delhi;*
3. *Diarmuid O Donovan (2008) The State of Health Atlas University of California Press;*
4. *G.C. Satpalhy (2003) Prevention of Hiv/Aids & Drug abuse, isha Books, New Delhi.*
5. *Global Health Challenges for Human Security (ed.) Lincoln Chen et el. Global Equity. UK 2003.*
6. *Jai P Narain (2004) Aids in Asia the challenge a head , Sage Publications New Delhi;*
7. *Julia A Ericksen (2008) Taking charge of Breast Cancer University of California Press;*
8. *Meena Sharma (2006) Aids, Awareness Through Community Participation Kalpaz Publications Delhi;*
9. *P Dixit (2005) Global HIV/AIDS Trends, Vista International Publishing House Delhi 110053;*
10. *Rose Weitz (2004) The Sociology of health, Illness & health care a critical approach Thomson wads worth.*
11. *Rubina Sehgal(2004)The Trouble Times; Sustainable Development in the age of extreme. Islamabad.*

#### **THIRD SEMESTER**

1. **ENGLISH-III (Technical Writing and Presentation Skills)**
2. **MEDICAL PHYSICS**
3. **ANATOMY-III**
4. **PHYSIOLOGY-III**



- 5. **BIOMECHANICS & ERGONOMICS-I**
- 6. **BIOCHEMISTRY-I**

**English III (Technical Writing and Presentation Skills)**

**CREDIT HRS:**

**3(3-0)**

**Objectives**

- Enhance language skills and develop critical thinking

**Course Contents**

**Presentation skills**

**Essay writing**

- Descriptive, narrative, discursive, argumentative

**Academic writing**

- How to write a proposal for research paper/term paper

- How to write a research paper/term paper (emphasis on style, content, language, form, clarity, consistency)

**Technical Report writing**

**Progress report writing**

*Note: Extensive reading is required for vocabulary building*

**Recommended books**

***Technical Writing and Presentation Skills***

***a. Essay Writing and Academic Writing***

1. *Writing. Advanced by Ron White. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 435407 3 (particularly suitable for discursive, descriptive, argumentative and report writing).*
2. *College Writing Skills by John Langan. Mc=Graw-Hill Higher Education. 2004.*
3. *Patterns of College Writing (4<sup>th</sup> edition) by Laurie G. Kirszner and Stephen R. Mandell. St. Martin's Press.*

***b. Presentation Skills***

***c. Reading***

1. *The Mercury Reader. A Custom Publication. Compiled by norther Illinois University. General Editors: Janice Neulib; Kathleen Shine Cain; Stephen Ruffus and Maurice Scharton. (A reader which will give students exposure to the best of twentieth century literature, without taxing the taste of engineering students).*

**MEDICAL PHYSICSCREDIT HOURS: 3(2-1)**

**COURSE DESCRIPTION**

This course will cover the basic principle of physics which are applicable in medical equipment used in Physical therapy. It also covers the fundamentals of currents, sound waves, electromegnetic radiations and their effects & application in physical therapy

**LEARNING OBJECTIVES**

- Describe basic principles of physics used in electromedical equipment

- Define laws of physics various aspect of physical phenomena and their interaction with human body
- Describe basic concepts of electricity, its laws, magnetism, electro mechanics and related theories
- Explain fundamentals of low, medium and high frequency currents, heat, electromagnetic radiations and sound waves.
- Demonstrate safety skills in biomedical instruments and radiation protection

## **COURSE CONTENTS**

### **ELECTRICITY AND MAGNETISM**

- Structure of an atom
- Electron Theory, Conductors & Insulators
- Conduction & Convection

### **STATIC ELECTRICITY**

- Charging by conduction and Induction
- Electrostatic Fields
- Capacitors, types of capacitors
- Arrangement of Capacitors in series and parallel
- Charging and discharging of capacitors
- Oscillating Discharge of Capacitors

### **CURRENT ELECTRICITY**

- Ohm's Law
- Electrical Components and their units
- Resistance and types
- Chemical effects of a Current
- Types of Current
- Cell and Batteries
- Simple Voltage Cell
- Combination of Cells in series and parallel
- Thermal effects of current
- Electrolysis and Electrolytic burns
- Ionization of gases and Thermionic emission
- Electronic tubes
- Diodes and Triodes

### **ELECTROMAGNETISM**

- Magnetic effect of an electric current
- Moving coil volt meter and Ammeter

- Measurement of high frequency and alternate current with meters
- Electromagnetic induction
- Faradays law
- Mutual and self-Induction
- Eddy currents
- Transformers
- Construction and types
- Static and auto Transformer

### **ELECTRO MECHANICS**

- Current for treatment
- Rectification
- Rectification of A.C
- Half wave and full wave Rectification
- Valve rectification circuits and metal rectifier
- Surging of current
- Vibrations and Multivibrators circuit

### **CLASSIFICATION OF**

#### **CURRENTS**

#### **(OVERVIEW)**

#### **LOW FREQUENCY CURRENT**

- Sinusoidal current
- Faradic current
- Galvanic current (constant and interrupted)
- Diadynamic current TENS
- Super imposed current and their graphical representation.

#### **MEDIUM FREQUENCY CURRENT**

- Interferential current
- Russian current.

#### **HIGH FREQUENCY CURRENT**

- Valves

- Transistors
- Long waves, medium waves short waves micro waves

### **SOUND WAVES**

- Wave motion in sound
- Infrasonic
- Normal hearing band
- Characteristics of the sound waves and their velocities
- Ultrasonic
- Reflection and refraction of sound waves
- Characteristics of tone resonance and beats
- Interference of sound waves

### **HEAT**

- Scales of temperature and its conversion to other scales
- Nature of heat energy
- Specific heat and three modes of heat energy transfer effect of impurities on melting and boiling points

### **ELECTROMAGNETIC RADIATION**

- Electromagnetic spectrum
- Relationship between frequency and wave length
- Laws of reflection, refraction and absorptions
- Total internal reflection
- Cosine law and inverse square law
- Concave and convex mirrors
- Lenses and prisms
- Reflectors

### **LAB WORK**

- Specify resistance by using the potential divider
- Verify the joules law of electrical methods
- Calibrate a thermo couple and an unknown temperature
- Find the acceleration due to gravity by simple pendulum
- Verify the law of reflection of light
- Verify the law of refraction of light
- Verify the refraction index of glass using rectangular slab

- Radio wave (long, medium, short, micro waves)
- Infra-red rays
- Visible rays
- Ultra violet rays
- X-rays
- Nuclear waves (alpha beta and gamma)

### **SAFETY IN BIOMEDICAL INSTRUMENTS**

- Electrical outlets, hot, neutral and ground connections
- Pervasiveness of electricity and of electric shocks
- Causes of electric shocks and precaution
- Effect of electric current on human body
- Techniques to reduce the effect of electric shock
- Earth shocks and precaution against earth shocks

### **RADIATION PROTECTION**

- Ionizing and non-ionizing radiations
- Quantities and associated units of radiations
- Effect of ionizing and non-ionizing radiation
- Internal and external hazards
- Main principle to control external hazard
- Distance and shielding

### **RECOMMENDED BOOKS**

1. *Clayton's Electrotherapy and actinotherapy* by: P. M Scott.

2. *Medical physics for physical therapists by: A. D Moore.*
3. *Preliminary Electricity for Physiotherapists by B. Savage.*
4. *Basic Electronics by Grob.*
5. *Principles of Bio-instrumentation by Richard A. Normann.*
6. *Hand book of Biomedical Instrumentation by R. S. Khanpur*
7. *Basic Radiation Protection Technology by Gollnick*

### **ANATOMY III**

**CREDITS 4(3-1)**

#### **COURSE DESCRIPTION**

The focus of this course is an in-depth and comprehensive study of human anatomy with emphasis on the head and neck, face and skull. Identify anatomical structures within the thorax with emphasis on structures of thoracic wall and thoracic cavity. Dissection and identification of structures in the manikins/smart board system supplemented with the study of charts, models, prosected materials and radiographs are utilized to identify anatomical landmarks and configurations of the head and neck, face, skull and thorax.

#### **LEARNING OBJECTIVES**

- Describe and illustrate human anatomy related to head and neck, face, skull and thoracic cavity
- Identify joints, muscles, nerves, veins, arteries and other anatomical structures of head and neck, face and skull
- Identify anatomical structures of the thoracic wall and thoracic cavity

#### **COURSE CONTENTS**

##### **THE HEAD AND THE NECK**

- Muscles around the neck
- Triangles of the neck
- Main arteries of the neck
- Main veins of the neck
- Cervical part of sympathetic trunk
- Cervical plexus
- Cervical spine (vertebrae)
- Joints of neck.

##### **THE FACE**

- Sensory nerves of the face
- Bones of the face
- Muscles of the face
- Facial nerve
- Muscles of mastication
- Mandible
- Hyoid bone
- Temporo-mandibular joint

- Brief description of orbit and nasal cavity

- Muscles of eye

##### **THE SKULL**

- Bones of skull
- Anterior cranial fossa
- Middle cranial fossa
- Posterior cranial fossa
- Base of skull
- Structures passing through foramina

##### **THORAX**

##### **STRUCTURES OF THE THORACIC**

##### **WALL**

- Dorsal spine (vertebrae)
- Sternum
- Costal Cartilages & Ribs
- Intercostal Muscles

- Intercostal Nerves
- Diaphragm
- Blood supply of thoracic wall
- Lymphatic drainage of thoracic wall
- Joints of thorax

### **THORACIC CAVITY**

- Mediastinum
- Pleura
- Trachea
- Lungs

- Bronchopulmonary segments
- Pericardium
- Heart – Its blood supply, venous drainage & nerve supply
- Large veins of thorax, superior and inferior vena cava., pulmonary veins brachiocephalic veins
- Large Arteries – Aorta & its branches

### **LAB WORK**

During study of Gross Anatomy, emphasis should be given on applied aspect, radiological anatomy, surface anatomy and cross-sectional anatomy of the region covered in the respective semester/year

#### **Note**

The students are expected to make a practical note book. The book is a collection of evidence that learning has taken place. It is a reflective record of their achievements

### **RECOMMENDED BOOKS**

1. *Gray's Anatomy by Prof. Susan Standring 39<sup>th</sup> Ed., Elsevier.*
2. *Clinical Anatomy for Medical Students by Richard S. Snell.*
3. *Clinically Oriented Anatomy by Keith Moore.*
4. *Clinical Anatomy by R. J. Last, Latest Ed.*
5. *Cunningham's Manual of Practical Anatomy by G. J. Romanes, 15<sup>th</sup> Ed., Vol-I, II and III.*
6. *The Developing Human. Clinically Oriented Embryology by Keith L. Moore, 6<sup>th</sup> Ed.*
7. *Wheater's Functional Histology by Young and Heath, Latest Ed.*
8. *Medical Histology by Prof. Laiq Hussain.*
9. *Neuroanatomy by Richard S. Snell.*

### **PHYSIOLOGY III**

### **CREDITS 3(2-1)**

#### **COURSE DESCRIPTION**

The course is designed to study the function of the human body with emphasis on function of human respiratory system, nervous system, reproductive system, body fluids and renal system. These topics are addressed by a consideration of clinical and applied physiology in relation to clinical modules and practice

#### **LEARNING OBJECTIVES**

- Describe major functions of the respiratory system
- Explain major functions of central and peripheral nervous
- Discuss major functions of male and female reproductive
- Describe major functions body fluids and renal system and relate this to clinical practice

## **COURSE CONTENTS**

### **RESPIRATORY SYSTEM**

- Function of respiratory tract
- Respiratory and non-respiratory function of the lungs
- Mechanics of breathing
- Production & function of surfactant and compliance of lungs
- Protective reflexes
- Lung volumes and capacities including dead space
- Diffusion of gases across the alveolar membrane
- Relationship between ventilation and perfusion
- Mechanism of transport of oxygen and carbon dioxide in blood
- Nervous and chemical regulation of respiration
- Abnormal breathing
- Hypoxia, its causes and effects
- Cyanosis, its causes and effects

### **NERVOUS SYSTEM**

- General organization of the nervous system
- Classification of nerve fibers
- Properties of synaptic transmission
- Function of neurotransmitters and neuropeptides
- Type and function of sensory receptors
- Function of the spinal cord and ascending tracts
- Reflex action and reflexes
- Muscle spindle and muscle tone
- Mechanism of touch, temperature and pain
- Functions of the cerebral cortex
- Difference between the sensory and motor cortex and their functions
- Motor pathways including pyramidal and extrapyramidal
- Basal Ganglia and its functions

- Cerebellum and its function
- Control of posture and equilibrium
- Physiology of sleep
- Physiology of memory
- Mechanism and control of speech
- Function of the thalamus
- Function of the hypothalamus and limbic system
- Production of CSF
- Mechanism of temperature regulation
- Function of the autonomic nervous system and the physiological changes of aging

### **REPRODUCTION**

- Function of the male reproductive system, Spermatogenesis
- Mechanism of erection and ejaculation
- Production and function of testosterone and Physiological changes during male puberty
- Function of the female reproductive system
- Production and function of estrogen, and progesterone
- Menstrual cycle
- Physiological changes during female puberty and menopause
- Pregnancy and the physiological changes taking place in the mother
- Function of the placenta
- Parturition and lactation
- Neonatal physiology

### **BODY FLUIDS AND KIDNEY**

- Components and quantitative measurements of body fluids
- Fluid compartments, tissue and lymph fluid
- Structure of the kidney and nephron
- General function of the kidney
- GFR and its regulation

- Formation of urine including filtration, re-absorption and secretion
- Plasma clearance, Mechanism of concentration and dilution of urine
- Water and electrolyte balance with reference to the kidney
- Role of the kidney in blood pressure regulation
- Hormonal functions of the kidney
- Acidification of urine and its importance
- Acid base balance with reference to the kidney
- Micturition and its control

## **LAB WORK**

### **RESPIRATORY SYSTEM**

- Stethography
- Breath sounds
- Respiratory rate
- Lung function tests

### **NERVOUS SYSTEM**

- Examination of superficial and deep reflexes
- Brief examination of the motor and sensory system
- Examination of the cranial nerve.

### **Note**

The students are expected to make a practical note book. The book is a collection of evidence that learning has taken place. It is a reflective record of their achievements

### **RECOMMENDED BOOKS**

1. *Textbook of Physiology by Guyton and Hall, Latest Ed.*
2. *Review of Medical Physiology by William F. Ganong, Latest Ed.*
3. *Physiology by Berne and Levy, Latest Ed.*
4. *Human Physiology: The Basis of Medicine by Gillian Pocock, Christopher D. Richards*
5. *Physiological Basis of Medical Practice by John B. West and Taylor, 12thEd.*

## **Biomechanics and Ergonomics I**

**Credit hr**

**3(3-0)**

### **COURSE DESCRIPTION**

This course aims to develop appreciation of how mechanical principles can be applied to understand the underlying causes of human movement. It also examines selected anatomical, structural and functional properties of human connective, muscular, and nervous tissues, as well as skeletal structures. Emphasis is placed on the mechanical, neuroregulatory, and muscular events that influence normal and pathological motion. This course will also help to gain an understanding of basic theoretical concepts, principles and techniques of ergonomics as well as an introduction to fundamental

ergonomic measurement tools for assessment of physical workload, posture, occupational exposure, and stress

## **LEARNING OBJECTIVES**

- Define concepts and terminology within the area of biomechanics
- Describe statics, kinematics and kinetics in human movement
- Analyze and describe the motion of a body or system using qualitative and quantitative approaches
- Demonstrate an understanding of how changes of movement patterns and techniques will influence the load on human tissues of the musculoskeletal system during movement
- Apply knowledge of the underlying musculoskeletal principles and concepts of biomechanics including the core areas of human movements in upper and lower extremity
- Understand and apply knowledge, tools and techniques used in Ergonomics

## **COURSE CONTENTS**

### **BASIC TERMINOLOGY**

- Biomechanics
- Mechanics
- Dynamics
- Statics
- Kinematics
- Kinetics and anthropometries
- Scope of scientific inquiry addressed by biomechanics
- Difference between quantitative and qualitative approach for analyzing human

### **KINEMATIC CONCEPTS FOR ANALYZING HUMAN MOTION**

- Common units of measurement for mass, force, weight, pressure, volume, density, specific weight, torque and impulse
- Different types of mechanical loads that act on human body
- Uses of available instrumentation for measuring kinetic quantities

### **BIOMECHANICS OF TISSUES AND STRUCTURES OF THE MUSCULOSKELETAL SYSTEM**

- Biomechanics of Bone
- Biomechanics of Articular Cartilage
- Biomechanics of Tendons and Ligaments
- Biomechanics of Peripheral Nerves and Spinal Nerve Roots
- Biomechanics of Skeletal Muscles

### **BIOMECHANICS OF THE HUMAN UPPER EXTREMITY**

- Biomechanics of the Shoulder
- Biomechanics of the Elbow
- Biomechanics of the Wrist and Hand
- Factors that influence relative mobility and stability of upper extremity articulation
- Muscles that are active during specific upper extremity movements
- Biomechanical contributions to common injuries of the upper extremity

### **BIOMECHANICS OF HUMAN LOWER EXTREMITY**

- Biomechanics of the Hip
- Biomechanics of the Knee
- Biomechanics of the ankle and foot



- Factors influencing relative mobility and stability of lower extremity articulations
- Adaptation of lower extremity to its weight bearing functions
- Muscles that are active in specific lower extremity movements
- Biomechanical contribution to common injuries of the lower extremity.

## **ERGONOMICS**

### **OVERVIEW AND CONCEPTUAL FRAMEWORK**

- Ergonomics and Therapy: An Introduction
- A Client-Centered Framework for Therapists in Ergonomics

- Macroergonomics

### **KNOWLEDGE, TOOLS, AND TECHNIQUES**

- Ergonomic Assessments/Work Assessments
- Anthropometry
- Cognitive and Behavioral Occupational Demands of Work
- Psychosocial Factors in Work-Related Musculoskeletal Disorders
- Physical Environment
- Human Factors in Medical Rehabilitation Equipment: Product Development and Usability Testing

### **RECOMMENDED BOOKS**

1. *Basic biomechanics of musculoskeletal system* By: Nordin & Frankel, 3rd edition.
2. *Basic Biomechanics*, By: Susan J. Hall 4<sup>th</sup> edition.
3. Additional study material as assigned by the tutor.
4. *Ergonomics for the therapist* by Karen Jacobs 3<sup>rd</sup> edition mosby and Elsevier publishers

## **BIOCHEMISTRY-I**

**CREDIT HOURS: 2(2-0)**

### **COURSE DESCRIPTION**

This course provides the knowledge and skills in fundamental organic chemistry and introductory biochemistry that are essential for further studies. It covers introduction to the biomolecules i.e. amino acid, proteins carbohydrates, fats, enzymes and nucleic acids. The nutritional biochemistry concludes the course

### **LEARNING OBJECTIVES**

- Describe cell and body fluids in the context of chemistry and human biochemistry
- Discuss the properties, classification and functions of biomolecules with emphasis on amino acid, peptides, proteins, enzymes, carbohydrates, lipids and nucleic acid
- Explain importance of nutritional biochemistry with emphasis on minerals, trace elements, vitamins and balance diet

### **COURSE CONTENTS**

#### **CELL**

- Introduction to Biochemistry
- Cell: (Biochemical Aspects)
- Cell Membrane Structure

- Membrane Proteins
- Receptors & Signal Molecules

### **BODY FLUIDS**

- Structure and properties of Water
- Weak Acids & Bases
- Concept of pH & pK
- Buffers, their mechanism of action
- Body buffers

### **BIOMOLECULES**

#### **AMINO ACIDS, PEPTIDES & PROTEINS**

- Amino acids: Classification
- Acid-Base Properties
- Functions & Significance
- Protein Structure, Primary, Secondary & Super secondary. & Structural Motifs
- Tertiary & Quaternary Structures of Proteins
- Protein Domains
- Classification of Proteins
- Fibrous proteins (collagens and elastins ) & Globular proteins

#### **ENZYMES**

- Introduction
- Classification & Properties of Enzymes
- Coenzymes
- Isozymes&Proenzymes
- Regulation & Inhibition of Enzyme activity & enzymes inhibitors
- Clinical Diagnostic Enzymology

#### **CARBOHYDRATES**

- Definition
- Classification
- Biochemical Functions & Significance of Carbohydrates
- Structure & Properties of Monosaccharides& Oligosaccharides
- Structure & Properties of Polysaccharides
- Bacterial cell Wall
- Heteropolysaccharides

- GAGS

### **LIPIDS**

- Classification of Lipids
- Fatty Acids: Chemistry
- Classification occurrence & Functions
- Structure & Properties of Triacylglycerols and Complex Lipids
- Classification & Functions of Eicosanoids
- Cholesterol: Chemistry, Functions & Clinical Significance
- Bile acids/salts.

### **NUCLEIC ACIDS**

- Structure, Functions & Biochemical Role of Nucleotides
- Structure & Functions of DNA
- Structure & Functions of RNA.

### **NUTRITIONAL BIOCHEMISTRY MINERALS & TRACE ELEMENTS**

- Sources
- RDA
- Biochemical Functions & Clinical Significance of Calcium & Phosphorus
- Sources
- RDA
- Biochemical Functions & Clinical Significance of Sodium Potassium& Chloride
- Metabolism of Iron, Cu, Zn, Mg, Mn, Se, I,F.

### **VITAMINS**

- Sources
- RDA
- Biochemical Functions & Clinical Significance of Fat Soluble Vitamins
- Sources
- RDA
- Biochemical Functions & Clinical Significance of Water Soluble
- Vitamins.

## **NUTRITION**

- Dietary Importance of Carbohydrates, Lipids & Proteins

- Balanced Diet.

### **RECOMMENDED BOOKS**

1. *Harper's Biochemistry by Robbert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, Latest Ed.*
2. *Lippincott's Illustrated Review of Biochemistry by Pamela C. Champe and Richard A. Harvey, Latest Ed.*
3. *Practical Clinical Biochemistry by Varley.*
4. *Textbook of Biochemistry by Devlin, 5<sup>th</sup> Ed.*
5. *Textbook of Medical Biochemistry Vol-I and II by M.A. Hashmi. Biochemistry by Stryer, Lubert, Latest Ed.*

## **FOURTH SEMESTER**

1. **ANATOMY-IV (Neuro Anatomy)**
2. **BIOMECHANICS & ERGONOMICS-II**
3. **HEALTH & WELNESS**
4. **BIOCHEMISTRY-II**
5. **EXERCISE PHYSIOLOGY**
6. **MOLECULAR BIOLOGY & GENETICS**

## **ANATOMY - IV (Neuro Anatomy)**

**CREDIT HOURS 3 (2-1)**

### **COURSE DESCRIPTION**

The purpose of the course is to provide the students an in-depth study and analysis of the regional and systemic organization of the body. Courses will emphasis on structure and function of human movement. Course will cover human anatomy with emphasis on the nervous, skeletal, muscle, and circulatory systems. Course will lay down the foundation of General Anatomy, the understanding of Neuro-anatomy (regional Anatomy) to be supplemented through dissection and identification of structures in the manikins/smart boards, charts, models, prospected materials and radiographs

### **LEARNING OBJECTIVES**

- Describe regional organization of human brain & neural pathways
- Classify the nervous system
- Explain structure and function of spinal cord

### **COURSE CONTENTS**

#### **NEURO ANATOMY**

- Central Nervous System: Disposition, Parts and Functions
- Brain stem (Pons, Medulla, and Mid Brain)
- Cerebrum
- Cerebellum
- Thalamus
- Basal ganglia
- Lymbic system
- Hypothalamus
- Internal Capsule

- Blood Supply of Brain
- Stroke and its types
- Ventricles of Brain
- CSF circulation and Hydrocephalus
- Meninges of Brain
- Neural pathways (Neural Tracts)
- Pyramidal and Extra pyramidal System (Ascending and Descending tracts)
- Functional significance of Spinal cord level
- Cranial Nerves with special emphasis upon IV, V, VII, XI, XII (their course, distribution, and palsies)

- Autonomic nervous system, its components
- Nerve receptors.

### **SPINAL CORD**

- Gross appearance
- Structure of spinal cord
- Grey and white matter (brief description)
- Meninges of spinal cord
- Blood supply of spinal cord
- Autonomic Nervous system

### **LAB WORK**

During study of Gross Anatomy, emphasis should be given on applied aspect, radiological anatomy, surface anatomy and cross-sectional anatomy of the region covered in the respective semester/year

#### **Note**

The students are expected to make a practical note book. The book is a collection of evidence that learning has taken place. It is a reflective record of their achievements

### **RECOMMENDED BOOKS**

1. *Gray's Anatomy by Prof. Susan Standring 41<sup>th</sup> Ed., Elsevier.*
2. *Clinical Neuroanatomy Anatomy for Medical Students by Richard S. Snell,*
3. *Clinically Oriented Anatomy by Keith Moore.*
4. *Clinical Anatomy by R.J. Last, Latest Ed.*
5. *Cunningham's Manual of Practical Anatomy by G.J. Romanes, 15<sup>th</sup> Ed., Vol-I, II and III.*

## **BIOMECHANICS AND ERGONOMICS II**

**CREDIT HR 3(2-1)**

### **COURSE DESCRIPTION**

This course aims to develop appreciation of how mechanical principles can be applied to understand the underlying causes of human movement. This course will also help to gain an understanding of basic theoretical concepts, principles and techniques of ergonomics as well as an introduction to fundamental ergonomic measurement tools for assessment of physical workload, posture, occupational exposure, and stress

### **LEARNING OBJECTIVES**

- Describe biomechanical structure and function of human connective, muscular, nervous and skeletal tissues
- Explain mechanical, neural and muscular events in normal and pathological motion
- Explain mechanical and ergonomic principles are applied in understanding the human movement

- Discuss basic concepts, principles and theories of ergonomics

## **COURSE CONTENTS**

### **BIOMECHANICS OF HUMAN SPINE**

- Biomechanics of the Lumbar Spine
- Biomechanics of the Cervical Spine
- Factors influencing relative mobility and stability of different regions of Spine
- Biomechanical adaptations of spine during different functions
- Relationship between muscle location, nature and effectiveness of muscle action in the trunk
- Biomechanical contribution to common injuries of the spine

### **APPLIED BIOMECHANICS**

- Introduction to the Biomechanics of Fracture Fixation
- Biomechanics of Arthroplasty
- Engineering Approaches to Standing, Sitting, and Lying
- Biomechanics of Gait

### **ANGULAR KINETICS OF HUMAN MOVEMENT**

- Angular analogues of mass, force, momentum and impulse
- Angular analogues of Newton's laws of motion
- Centripetal and Centrifugal forces
- Angular acceleration

### **ANGULAR KINEMATICS OF HUMAN MOVEMENT**

- Measuring body angles
- Angular kinematics Relationships
- Relationship between Linear and Angular motion

### **HUMAN MOVEMENT IN FLUID MEDIUM**

- The nature of fluids

- Buoyancy and floatation of human body
- Drag and components of drag
- Lift Force
- Propulsion in a fluid medium

### **ERGONOMICS II**

#### **SPECIAL CONSIDERATIONS**

- Lifting Analysis
- Seating
- Computers and Assistive Technology

#### **APPLICATION PROCESS**

- Ergonomics of Children and Youth.
- Ergonomics of Aging
- Ergonomics in Injury Prevention and Disability Management
- Ergonomics of Play and Leisure

### **LAB WORK**

#### **GONIOMETRY**

- Introduction to Goniometry
- Basic concepts in Goniometry
- Joint motion
- Range of motion
- Factors affecting ROM
- End-feel
- Capsular and non-capsular pattern of ROM limitation
- Procedures
- Positioning
- Stabilization
- Measurements Instruments
- Alignment
- Recording
- Procedures
- Measurement of upper extremity & lower extremity
- Measurement of temporomandibular, cervical, thoracic & lumbar spine

- Joint measurement by body position
- Biomechanical assessment of Upper extremity
- Biomechanical assessment of Lower Extremity
- Biomechanical assessment of Gait
- Reflective case assignment related to biomechanics of various regions of the body
- Measurement of angles of joints
- Biomechanical study of deformities

### RECOMMENDED BOOKS

1. *Basic biomechanics of musculoskeletal system* By: Nordin & Frankel, 3rd edition.
2. *Basic Biomechanics*, By: Susan J. Hall 4<sup>th</sup> edition.
3. *Additional study material as assigned by the tutor.*
4. *Ergonomics for the therapist* by Karen Jacobs 3<sup>rd</sup> edition mosby and Elsevier publishers.

### HEALTH & WELLNESS

### CREDIT HOURS 2(2-0)

#### COURSE DESCRIPTION

This course will facilitate discussion on the theories of health and wellness, including motivational theory, locus of control, public health initiative, psycho-social, spiritual and cultural. The course will cover health risks, screening, and assessment considering epidemiological principles. This will also cover risk reduction strategies for primary and secondary prevention, including programs for special populations

#### LEARNING OBJECTIVES

- Define Health, wellness and fitness
- Describe healthy people and role of PT in Health and wellness
- Explain the key concepts of physical and mental fitness
- Explain health and wellness issues in child, adolescence and old age
- Discuss Women health issues

#### COURSE CONTENTS

##### PREVENTION PRACTICE

##### A HOLISTIC PERSPECTIVE FOR PHYSICAL THERAPY

- Defining Health
- Predictions of Health Care
- Comparing Holistic Medicine and Conventional Medicine
- Distinguishing Three Types of Prevention Practice.

##### HEALTHY PEOPLE

- Definition of healthy people

- Health education Resources
- Physical Therapist role for a healthy community.

##### KEY CONCEPTS OF FITNESS

- Defining & Measuring Fitness
- Assessment of Stress with a Survey
- Visualizing Fitness
- Screening for Mental and Physical Fitness
- Body Mass Index calculations

### **FITNESS TRAINING**

- Physical Activities Readiness Questionnaire
- Physical Activities Pyramid
- Exercise Programs

### **SCREENING FOR HEALTH, FITNESS, AND WELLNESS**

- Distinguishing Screening, Evaluation & Examination
- Interviewing for Health, Fitness and Wellness
- Vital Signs, 3-minute Step Test, and Borg perceived Scale of Exertion
- Seven Dimensions of Wellness
- Physical Health Screening.

### **HEALTH, FITNESS, AND WELLNESS ISSUES DURING CHILDHOOD AND ADOLESCENCE**

- Structure and Function
- Recognizing and Reporting Child abuse
- Denver II Developmental Screening
- Special Concerns in Pediatrics
- Program for Prevention of Obesity

### **HEALTH, FITNESS, AND WELLNESS DURING ADULTHOOD**

- Tasks of Adulthood
- Adult Health and Wellness Risks
- Screening Tools for Adulthood
- Adult Educational Materials

### **WOMEN'S HEALTH ISSUES: FOCUS ON PREGNANCY**

- Screening for Women's Health
- Women's Heart Disease

- Female Athlete Triad
- Educational Material for Women
- Pre-partum and Postpartum Exercises

### **PREVENTION PRACTICE FOR OLDER ADULTS**

- Ageism
- Anatomical and Physiological Changes with Aging
- Common Health Problems of Older Adults
- Screening Older Adult for Health Fitness and Wellness
- Fitness for Older Adults

### **RESOURCES TO OPTIMIZE HEALTH AND WELLNESS**

- Chronic Illness
- Nutrition
- Progressive Relaxation
- Time management
- Spirituality

### **HEALTH PROTECTION**

- Infection Control
- Injury Prevention during Childhood
- Injury prevention during Adolescence
- Injury Prevention during Adulthood
- Injury Prevention during Older Adulthood

### **MARKETING HEALTH AND WELLNESS**

- Definition of Marketing
- Marketing Strategies for health and wellness Centres

### **RECOMMENDED BOOKS**

1. *A Physical Therapist's Guide to Health, Fitness, and Wellness, By Catherine R Thompson, PhD, MS, PT.*

**BIOCHEMISTRY-II**

**CREDIT HOURS: 3(2-1)**

**COURSE DESCRIPTION**

This course will provide the knowledge and skills in fundamental organic chemistry and introductory biochemistry that are essential for further studies. It will also cover the basic biochemical, cellular, biological and microbiological processes, basic chemical reactions in the prokaryotic and eukaryotic cells, the structure of biological molecules, introduction to the nutrients i.e. carbohydrates, fats, enzymes, nucleic acids and amino acids. The course also covers the section of nutritional biochemistry

**LEARNING OBJECTIVES**

- Explain biochemical description of different human tissues
- Describe respiration at cellular and molecular level
- Explain metabolism of carbohydrates, protein and lipids

**COURSE CONTENTS**

**TISSUE BIOCHEMISTRY**

- Extracellular Matrix
- Collagen
- Elastin and Extracellular Matrix Components
- Biochemistry of Proteoglycans
- Bone & Teeth
- Muscle & Cytoskeleton

**METABOLISM BIOENERGETICS**

- Introduction to Bioenergetics
- Biological Oxidations
- Electron Transport Chain and Oxidative Phosphorylation

**METABOLISM OF CARBOHYDRATES**

- Digestion & Absorption of Carbohydrates
- Glycolysis & its Regulation
- Citric Acid Cycle
- Metabolism of Glycogen
- Gluconeogenesis and regulation of blood glucose
- Pentose Phosphate Pathway & its Significance

**METABOLISM OF LIPIDS**

- Digestion & Absorption of Lipids
- Metabolism & Clinical Significance of Lipoproteins
- Fatty acid oxidation biosynthesis and metabolism of Triacylglycerols
- Metabolism & clinical Significance of Cholesterol
- Metabolism of Eicosanoids

**METABOLISM OF PROTEINS & AMINO ACIDS**

- Digestion of Proteins & Absorption of Amino Acids
- Transamination & Deamination of Amino Acids and urea cycle
- Specialized products formed from Amino Acids

**LAB WORK**



### Section 1

#### Techniques of Instruments in Clinical Biochemistry with examples.

1. Visible Spectrophotometry
2. Flame photometry
3. UV & IR spectrophotometry
4. Atomic Absorption spectrophotometry
5. pH Metry
6. Chromatography and determination of Amino Acids in Urine by pape chromatography

### Section 2

#### Clinical quantatives analysis in Biochemistry

1. Sample Collection Blood, Faces and body fluids
2. Serum Glucose Estimation
3. Glucose tolerance Test (GTT)
4. Serum Cholesterol estimation (Total, HDL and HDL cholesterol)

5. Serum Bilirubin Estimation (Total, Direct and Indirect bilirubins)
6. Serum Amylase Estimation
7. Serum AST Estimation
8. Serum ALT Estimation
9. Serum ALP Estimation
10. Serum Creatine Kinase(CK) Estimation
11. Serum Ascorbic acid Estimation
12. Serum LDH Estimation
13. Serum Proteins Estimation (Total, Albumin & Globulin)
14. Serum Total lipids Estimation
15. Serum calcium Estimation (total, ionized & unionized)
16. Serum Uric acid Estimation
17. Serum Magnesium Estimation
18. Serum Urea Estimation
19. Serum Creatinine Estimation

#### RECOMMENDED BOOKS

1. *Harper's Biochemistry* by Robbert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, Latest Ed.
2. *Lippincott's Illustrated Review of Biochemistry* by Pamela C. Champe and Richard A. Harvey, Latest Ed.
3. *Practical Clinical Biochemistry* by Varley.
4. *Textbook of Biochemistry* by Devlin, 5<sup>th</sup> Ed.
5. *Textbook of Medical Biochemistry Vol-I and II* by M. A. Hashmi. *Biochemistry* by Stryer, Lubert, Latest Ed.

### EXERCISE PHYSIOLOGY

CREDIT HOURS: 3(2-1)

#### COURSE DESCRIPTION

This course aims to develop a critical appreciation of exercise and applied physiology. The course will also enable the readers to understand injury prevention, rehabilitation and performance enhancement strategies.

#### LEARNING OBJECTIVES

- Define homeostasis, types of systems involved in maintaining Human internal environment
- Discuss the responses, including hormonal, circulatory, respiratory and thermal to exercise
- Define principles of cardiopulmonary training
- Discuss the effects of exercise on VO<sub>2</sub> max and lactic acid
- Describe training of Female athlete, children and old population.

## **COURSE CONTENTS**

### **PHYSIOLOGY OF EXERCISE**

#### **CONTROL OF INTERNAL ENVIRONMENT**

- Homeostasis
- Control systems of the body
- Nature of the control system
- Examples of homeostatic control
- Exercise : A test of homeostatic control

#### **HORMONAL RESPONSES TO EXERCISE**

- Neuroendocrinology
- Hormones: Regulation and action
- Hormonal control of substrate mobilization during exercise

#### **MEASUREMENT OF WORK, POWER & ENERGY EXPENDITURE**

- Units of measure
- Work and power defined
- Measurement of work and power
- Measurement of energy expenditure
- Estimation of energy expenditure
- Calculation of exercise efficiency

#### **CIRCULATORY RESPONSES TO EXERCISE**

- Organization of the circulatory system
- Heart: myocardium and cardiac cycle
- Cardiac output
- Hemodynamics
- Changes in oxygen delivery to muscle during exercise

- Circulatory responses to exercise
- Regulation of cardiovascular adjustments to exercise

#### **RESPIRATION DURING EXERCISE**

- Function of the lung
- Structure of respiratory system
- Mechanics of breathing
- Pulmonary ventilation
- Pulmonary volumes and capacities
- Diffusion of gases
- Blood flow to the lungs
- Ventilation-perfusion relationships
- O<sub>2</sub> and CO<sub>2</sub> transport in blood
- Ventilation and acid base balance
- Ventilatory and blood-gas responses to exercise
- Control of ventilation

#### **TEMPERATURE REGULATION**

- Overview of heat balance during exercise
- Overview of heat production/heat loss
- Body's thermostat-hypothalamus
- Thermal events during exercise
- Exercise in the heat
- Exercise in cold environment.

#### **THE PHYSIOLOGY OF TRAINING: EFFECT ON VO<sub>2</sub> MAX, PERFORMANCE, HOMEOSTASIS AND STRENGTH**

- Principles of training
- Research designs to study training

- Endurance training and VO<sub>2</sub> max
- VO<sub>2</sub> max: cardiac output and arterio-venous oxygen difference
- Detraining and VO<sub>2</sub> max
- Endurance training: effects on performance and homeostasis
- Endurance training: links between muscle and system physiology
- Physiological effects of strength training
- Physiological mechanisms causing increased strength.

## **PHYSIOLOGY OF HEALTH AND FITNESS**

### **WORK TESTS TO EVALUATE CARDIO RESPIRATORY FITNESS**

- Cardio respiratory fitness
- Testing procedures
- FIELD Tests for estimating CRF
- Graded exercise tests: measurements
- VO<sub>2</sub> max
- Graded exercise tests: protocols.

### **EXERCISE PRESCRIPTION FOR HEALTH AND FITNESS**

- Prescription of exercise
- General guidelines for improving
- Exercise prescription for CRF
- Sequence of physical activity
- Strength and flexibility training.

### **EXERCISE FOR SPECIAL POPULATIONS**

- Diabetes
- Asthma
- Chronic obstructive pulmonary disease
- Hypertension
- Cardiac rehabilitation
- Exercise for older adults
- Exercise during pregnancy.

## **PHYSIOLOGY OF PERFORMANCE FACTORS AFFECTING PERFORMANCE**

- Sites of fatigue
- Factors limiting All-out anaerobic performances
- Factors limiting All-out aerobic performances

## **LABORATORY ASSESSMENT OF HUMAN PERFORMANCE**

- Laboratory assessment of physical performance
- Direct testing of maximal aerobic power
- Laboratory tests to predict endurance performance
- Determination of anaerobic power
- Evaluation of muscular strength.

## **TRAINING OF PERFORMANCE**

- Training principles
- Components of a training session: warm-up, workout and cool down
- Training to improve aerobic power
- Injuries and endurance training
- Training for improved anaerobic power
- Training to improve muscular strength
- Training for improved flexibility
- Year-round conditioning for athletes
- Common training mistakes.

## **TRAINING FOR THE FEMALE ATHLETE, CHILDREN AND SPECIAL POPULATION**

- Factors important to women involved in vigorous training
- Sports conditioning for children
- Competitive training for diabetics
- Training for asthmatics
- Epilepsy and physical training.

## LAB WORK

- Predicting VO<sub>2</sub> max using the Harvard step test
- Ratings of perceived exertion and intensity of exercise
- Time limit test
- Predicting VO<sub>2</sub> max using Astrand Rhythmic Mometogram
- Determining maximal oxygen uptake using treadmill
- The effects of endurance and strength exercise on CV response
- Blood lactate sampling at rest and during exercise
- Determining onset of blood lactate accumulation and lactate threshold
- Assessing muscular efficiency
- The stretch reflex
- Stoop test

## RECOMMENDED BOOKS

1. *Exercise Physiology- Theory and Application to Fitness and Performance by: Scott K. Powers, Edward T. Howley.*
2. *Exercise physiology, A thematic Approach By: Tudor Hale, University College Chichester, UK.*
3. *Additional study material as assigned by the tutor.*

## MOLECULAR BIOLOGY & GENETICS

## CREDIT HOURS 2(2-0)

### COURSE DESCRIPTION

This course covers the brief overview of the cellular & molecular biology, membrane physiology, introduction to molecular medicine and gene therapy, nuclear transplantation, gene therapy for neurological disorders, gene therapy for musculoskeletal disorders and the concept of molecular medicine in physical therapy.

This course has been designed to address a more in depth study of biology of inheritance and inheritance patterns. This course focuses on classical Mendelian genetics, the DNA molecule and molecular genetics, and population genetics. The course also covers Human genome and Molecular Pathology.

### COURSE CONTENTS

#### BRIEF REVIEW OF CELLULAR & MOLECULAR BIOLOGY

- Structure and Functions of Cell, Nucliec Acid, Chromosomes & Proteins

#### INTRODUCTION TO MOLECULAR MEDICINE AND GENE THERAPY

- Introduction
- Genetic Manifestations of Molecular Medicine
- Gene Therapy and Patterns of Gene

Expression

- Gene Therapy and Molecular Medicine
- Gene Therapy: Current Basic Science Issues
- Human Gene Therapy: Current Status and Basic Science

#### GENE THERAPY FOR NEUROLOGICAL DISORDERS:

- Introduction
- Sorting Out the Complexity of the

- Nervous System
- What Goes Wrong in Neurological Disorders
- Neurotrophic Factors and Gene Therapy
- Neural Transplants and Stem Cells
- Clinical Neurodegenerative Conditions
- Clinical Trials Testing Genetically Modified Cells and Neurotrophic Factors for Neurodegeneration:
- Stem Cell Therapy in Spinal Cord Injuries
- Future Considerations and Issues

### **GENE THERAPY FOR MUSCULOSKELETAL DISORDERS**

- Bone
- Introduction:
- Regulatory Factors in Bone Development and Regeneration:
- Cells for Gene Therapy Strategies Directed Towards Bone Regeneration
- In Vivo & Ex Vivo Gene Therapy Strategies for Bone
- Clinical Trials for Bone Replacement

### **LIGAMENT AND TENDON:**

- Introduction
- Ligament and Tendon Growth Factors
- Cells for Gene Therapy Strategies Directed Towards Ligament Regeneration
- In Vivo & Ex Vivo Gene Therapy Strategies to intact Ligament and Tendon
- Gene Therapy Strategies for Lacerated Tendon repair, promote Osseo-Integration of Tendon grafts
- Clinical Trials for Ligament and Tendon replacement:

### **CARTILAGE:**

- Introduction
- Growth factors and cytokines for

- cartilage repair and regeneration
- Cells for Gene Therapy Strategies Directed Towards Cartilage Regeneration
- Gene Delivery Strategies for Cartilage Repair and Regeneration
- Dose Dependency Detected with Cartilage Gene Therapies
- Therapeutic Effects by Transfected Cells on Distal Joints
- Transfected Xenogenic Cells for Cartilage Repair
- Cartilage Tissue Engineering and Gene Therapy

### **INTERVERTEBRAL DISC**

- Introduction
- The Biology of Intervertebral Disc Degeneration
- Application of Gene Therapy in Intervertebral Disc
- In Vivo & Ex Vivo Gene Therapy Strategies to Intervertebral Disc
- Clinical Trials for Intervertebral Disc

### **MUSCLES**

- Introduction
- The Molecular Basis of Myopathies
- In Vivo & Ex Vivo Gene Therapy Strategies in Myopathies
- Clinical Trials in Myopathies
- Gene Therapy: Ethical Issues at the Policy Level

### **A brief introduction to following topics**

- The chemistry of dna
- Dna replication and recombination
- Transcription, translation and protein synthesis
- Cell-based dna cloning
- Nucleic acid hybridization assays:
- Pcr, dna sequencing and in vitro mutagenesis:
- Organization of the human genome:
- Human gene expression:

- Instability of the human genome:
- Mutation and dna repair:
- Physical and transcript mapping:

### RECOMMENDED BOOKS

1. *Molecular Medicine: Genomics to Personalized Healthcare, 3<sup>rd</sup> Edition* by R. Trent. (Published in 2005 by Academic Press).
2. *Principles of Molecular Medicine, 2<sup>nd</sup> Edition* by Marschall S. Runge and Cam Patterson. (Published in 2006 by Humana Press).
3. *Molecular Neuropharmacology: A Foundation for Clinical Neuroscience, 2<sup>nd</sup> Edition* by Eric J. Nestler, Steven E. Hyman and Robert C. Malenka. (Published in 2008 by McGraw-Hill Professional).
4. *Molecular Medicine: An Introductory Text, 3<sup>rd</sup> Edition* by R. J. Trent. (Published in 2005 by Academic Press).
5. *Molecular Biology of the Cell, 5<sup>th</sup> Edition* by Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts and Peter Walter. (Published in 2007 by Garland Science).
6. *Human Molecular Genetics, 3<sup>rd</sup> Edition* by Tom Strachan and Andrew Read. (Published in 2003 by Garland Science/Taylor & Francis Group).
7. *Molecular Medicine for Clinicians, 1<sup>st</sup> Edition* by Barry Mendelow, Michele Ramsay, Nanthakumar Chettyan and Wendy Stevens. (Published in 2008 by University Press).
8. *Molecular Markers, Natural History and Evolution, 2<sup>nd</sup> Edition* by John C. Avise. (Published in 2004 by Sinauer Associates).
9. *“Molecular Pathology: The Molecular Basis of Human Disease, 1<sup>st</sup> Edition* by William B. Coleman, and Gregory J. Tsongalis. (Published in 2009 by Academic Press).
10. *Additional Study Material as assigned By the tutor.*
11. *Genetics: A Conceptual Approach, 3<sup>rd</sup> Edition* by Benjamin Pierce (Published in 2007 by W. H. Freeman).
12. *Human Molecular Genetics, 3<sup>rd</sup> Edition* by Tom Strachan and Andrew P Read (Published in 2003 by Garland Science/Taylor & Francis Group).
13. *Genetics-From Genes to Genomes, 3<sup>rd</sup> Edition* by Hartwell, Hood, Goldberg, Reynolds, Silver and Veres (Published in 2006 by McGraw-Hill).
14. *Additional Study Material, as assigned By the tutor.*

### FIFTH SEMESTER

1. **PATHOLOGY & MICROBIOLOGY-I**
2. **PHARMACOLOGY & THERAPEUTIC-I**
3. **PHYSICAL AGENTS & ELECTROTHERAPY-I**
4. **THERAPEUTIC EXERCISES & TECHNIQUES**
5. **BIOSTATISTICS-I**
6. **BEHAVIORAL SCIENCES (PSYCHOLOGY & ETHICS)**
7. **SUPERVISED CLINICAL PRACTICE-I**

**PATHOLOGY & MICROBIOLOGY-I**

**CREDIT HOURS 2(2-0)**

## **COURSE DESCRIPTION**

The course will develop an understanding among students about the pathology of underlying clinical disease states and involving the major organ systems. Epidemiological issues will be presented and discussed. Students will use problem-solving skills and information about pathology and Microbiology to decide when referred to another health care provider or alternative intervention is indicated

## **COURSE OBJECTIVES**

- Discuss concepts of general pathology
- Discuss recognize signs and symptoms that are considered red flag for serious disease
- Discuss and disseminate pertinent information and findings, and ascertain the appropriate steps to follow during physical therapy management

## **COURSE CONTENTS**

### **GENERAL PATHOLOGY WHICH INCLUDES**

#### **CELL INJURY AND DEATH**

- Causes of cell injury
- Pathogenesis of necrosis and apoptosis
- Sub cellular responses

#### **CELL ADAPTATIONS**

- Relevant examples: Hyperplasia, Hypertrophy, Atrophy, Metaplasia and intracellular accumulation

#### **INFLAMMATION**

- Acute inflammation
- Vascular events and cellular events
- Chemical mediators

#### **CHRONIC INFLAMMATION**

- General and granulomatous inflammation
- Morphologic patterns of acute and chronic inflammation

#### **HEALING & REPAIR**

- Normal controls of healing and repair.
- Repair by connective tissue
- Wound healing

#### **HAEMODYNAMIC DISORDERS**

- Edema and its types
- Hyperemia /congestion, Hemorrhage, Thrombosis, Embolism, Infarction, Shock.

#### **DISEASES OF IMMUNITY**

- General features of immunity
- Hypersensitivity reactions
- Immune deficiencies.
- Autoimmunity
- Amyloidosis

#### **NEOPLASIA**

- Nomenclature of neoplasia
- Molecular basis of neoplasia
- Carcinogenic agents of neoplasia
- Clinical aspects of neoplasia

#### **MICROBIOLOGY**

#### **THE BACTERIA**

- Bacterial cell structure, its forms and function
- Identification and classification of bacteria
- Gram stain

#### **METHODS OF STUDYING MICRO-ORGANISM**

- Culturing, inoculation and identification
- Types of media
- Physical states of media

- Stages in the normal growth curve
- Microbial genetics
- Prokaryotic transcriptions and translations.
- Conjugations
- Mutation and its causes.
- Mechanism of drug resistances and its pathogenesis.
- Gateway to infection.
- Resident flora and its mechanism of invasions
- Classic stages of clinical infection
- Sterilization and disinfection.

#### **MICROBIAL GROWTH**

#### **RECOMMENDED BOOKS**

1. Goodman CC & Fuller KS. *Pathology: implication for the Physical Therapist. 4th ed. Elsevier:USA;2015*
2. Kumar V, Abbas AK, & Aster JC. *Robbins basic pathology. 9th ed. Elsevier: Philadelphia; 2013.*
3. Levinson W. *review of medical microbiology & immunology. 14th ed. McGraw-Hill: Canada; 2016*
4. Thomson AD & Cotton RE. *Lecture notes on pathology. 3rd ed. FA Davis; 1983*

#### **PHARMACOLOGY & THERAPEUTICS- ICREDIT HOURS 2(2-0)**

#### **COURSE DESCRIPTION**

This course deals with pharmacodynamics, pharmacokinetics, clinical/therapeutic uses and toxicology of drugs. Emphasis is given on how a drug works to anticipate when giving a drug to a patient are of paramount importance include administering drugs, calculating medication dosages based on given setting, assessing drug effects, intervening to make a drug more tolerable, and providing teaching about drugs and the drug regimen.

#### **LEARNING OBJECTIVES**

- Discuss prescription and/or over-the-counter medications used in the management of a variety of patient conditions encountered during physical therapy management.

#### **COURSE CONTENTS**

#### **GENERAL PRINCIPLES OF PHARMACOLOGY**

- Various principal of pharmacology

- Introduction to pharmacokinematics
- Various drug dosage forms and pharmacological doses



- Various routes of drug administration and their advantages/ disadvantages
- Factors modifying drug absorption and distribution
- Major mechanisms responsible for drug metabolism
- Factors modifying drug metabolism
- Basic principles of drug excretion
- Factors modifying drug excretion
- Various mechanisms by which drugs exert their effects
- Various types of pharmacological graphs
- Identification of the therapeutic index and therapeutic window on a given dose response curve

### **DRUG USED TO TREAT PAIN AND INFLAMMATION**

- Therapeutic uses of opioid analgesics.
- Classification of non-steroidal anti-inflammatory drugs on the basis of mechanism of action.
- Pharmacological management of rheumatoid and osteoarthritis.
- Patient control analgesia

### **PHARMACOLOGY OF CENTRAL NERVOUS SYSTEM**

- Classification of the drugs, which modulate the central Nervous System according to their general

principles, selectivity, specificity and mode of action.

- Pharmacokinetics, clinical uses, contraindications, adverse effects and toxicity of drugs acting on above receptor system
- Sedative, hypnotic and anxiety agents
- Drugs used to treat effective disorders depression and manic depression
- Antipsychotic and antiepileptic drugs
- Pharmacologic management of Parkinson disease
- General and local anesthetics

### **DRUGS AFFECTING SKELETAL MUSCLE**

- Skeletal Muscle Relaxants

### **AUTONOMIC AND CARDIOVASCULAR PHARMACOLOGY**

- Introduction to Autonomic Pharmacology
- Cholinergic, Adrenergic and Antihypertensive Drugs
- Treatment of Angina Pectoris
- Treatment of Cardiac Arrhythmias
- Treatment of Congestive Heart Failure
- Treatment of Coagulation Disorders and Hyperlipidemia

### **RECOMMENDED BOOKS**

1. *Ciccone CD. Pharmacology in rehabilitation. 5th ed. United states: Cardiopulmonary Perspectives in Rehabilitation; 2015.*
2. *Whalen K, Finkel R & Panavelli TA, editors. Lippincott illustrated reviews: pharmacology. 6th ed. Philadelphia: Wolters Kluwer; 2015*
3. *Cheema M. multi author textbook of pharmacology and therapeutics. Lahore: National Medical Publication; 2015: 1.*
4. *Cheema M. multi author textbook of pharmacology and therapeutics. Lahore: National Medical Publication; 2015: 2*

## **PHYSICAL AGENTS & ELECTROTHERAPY-ICREDIT HOURS 3(2-1)**

### **COURSE DESCRIPTION**

This course deals with the Physical principle associated with Electrotherapy and methods used in the field of Physical Therapy.

### LEARNING OBJECTIVES

- Discuss in detail the information about the physiological and therapeutic uses, risks, preventions and knowledge of indications and contraindications on the type of electric current to be used in different disorders
- Demonstrate fundamental skills that will be used to train in electrotherapy modalities according to the need of patient

### COURSE CONTENTS

#### INTRODUCTION & GENERAL CONSIDERATION OF ELECTROTHERAPY

- Electrotherapy.
- Types of currents and its parameters.
- Identification of the safety rules for using electrical currents.
- Background with respect to RMP, nerve impulse, electrical charges of nerve and tissues.
- Healing process.
- Application of the energy to the body for therapy.
- List of the risks, preventions and knowledge of indications and contraindications.

#### TYPES OF CURRENT USED

- Low frequency current
- Medium frequency current

#### LOW FREQUENCY CURRENT

- Faradic current
- Sinusoidal current
- Galvanic current
  - constant galvanic current
  - modified galvanic current
- Superimposed currents
- Transcutaneous Electrical Nerve Stimulation (TENS)
- Dia-Dynamic currents

#### TRANSCUTANEOUS ELECTRICAL NERVE STIMULATOR (TENS)

- TENS
- Characteristics of TENS
- Modes, pain theories, pain modulation and technique of application of TENS
- Therapeutic uses, contraindications and dangers of TENS
- Clinical method of application and dosage

#### FARADIC AND FARADIC TYPE CURRENT

- Faradic and Faradic type current.
- Explain true Faradic current
- Therapeutic effects, mode of applications, contraindications and dangers of Faradic current?
- Clinical method of application and dosages of Faradic current

#### SINUSOIDAL CURRENT

- Detailed description of sinusoidal current Treatment
- Methods of application

#### GALVANIC DIRECT CURRENT AND INTERRUPTED DIRECT CURRENT (DC & IDC)

- Galvanic Current & IDC.
- Production and transmission of galvanic & IDC.

- Effects, uses, contraindications and dangers of DC & IDC.
- Dosages and clinical methods of application of DC & IDC

### **MODIFIED GALVANIC CURRENT**

- Modified galvanic currents
- Physical and Therapeutic effects
- Uses
- Treatment techniques & methods of application
- Electrical stimulation of nerve & muscle
- Nerve impulse
- Property of accommodation
- Electrical Reactions
- Normal & abnormal reactions of nerve & muscle to faradism & interrupted direct current
- Changes in electrical reaction in Upper motor and Lower motor neurons and Muscular disease

### **DIDYNAMIC CURRENT**

- Didynamic current
- Explain characteristics, derivatives and effects of Didynamic current
- Explain the technique of application, therapeutic uses, contraindications and dangers
  - Example: Sprain ankle, Sciatica. Facial neuralgia. Trigeminal neuralgia & Otitis media
- Clinical method of application and dosage

### **MEDICAL IONIZATION**

- Describe Theory & proof of ionization
- Discuss Effects of various ions; iodine, salicylate, albacid, copper, zinc histamine, carbacol, renitinenovocaine, lithium
- Describe Techniques of medical ionization with vasodilator drugs

- Discuss Techniques for special areas.

### **ELECTRO-DIAGNOSTICS**

- What are the use of electrical changes in evaluation and diagnosis?
- What are Faradic & I. D. C test
- What is Accomodity test
- Explain the physiological changes in Peripheral nerve.
- Give an assessment of nerve and muscle potential.
- What do you about Electromyography? Explain briefly.
- Give an assessment by observing the results of stimulating nerve and muscle.
- Explain muscle contraction.
- Give SDCT (Strength Duration Curve Test).
- Explain Evoked potentials.

### **MEDIUM FREQUENCY CURRENT**

- Define Russian current,
- Explain the technique of application, contraindications and dangers of Russian current.
- Explain clinical method of application and dosage
- Define IFC,
- What are the characteristics, effects, technique of application and therapeutic uses
- Explain the contraindications, dangers and clinical method of application of IFC.

### **SUPER IMPOSED CURRENT**

- Give Introduction
- Definition
- Describe Effects & uses, Technique, Methods, Dangers and Precautions

### **HIGH VOLTAGE CURRENT (HVC)**

- Define HVC, Explain the characteristics, effects and uses of HVC.
- Explain the technique of application of HVC.
- What are the contraindications and dangers of HVC
- What is the clinical method of application and dosage of HVC

### **HIGH FREQUENCY CURRENTS**

- Introductions of high frequency currents
- Describe Productions of high frequency currents
- Describe Uses, indication, contraindications & methods of applications of high frequency currents

### **LAB WORK**

- Location of motor points
- Faradic & I.D.C test
- Strength duration curve, determination of Rheobase and Chronaxie
- Accommodate test
- Electromyography
- Definition, method, value, uses of E.M.G, Electromyography & temperature, feedback techniques
- Practical application of TENS in physical therapy treatment
- Reflective clinical case studies
- Iontophoresis
- Demonstration of techniques during practical classes, later on techniques practiced by students on patients attending the department under supervision of trained physiotherapists.

### **Note**

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed

### **RECOMMENDED BOOKS**

1. *Savage B. Practical electrotherapy for physiotherapists. UK: Faber; 1960.*
2. *Scott PM. Clayton's electrotherapy and actinotherapy. 7th ed. USA: Williams & Wilkins; 1980.*
3. *Watson T. Electrotherapy: evidence-based practice. 12th ed. Edinburgh: Churchill Livingstone; 2008*
4. *Cameron MH. Physical agents in rehabilitation: from research to practice. 4th ed. St. Louis: Elsevier; 2013.*
5. *Singh J. Textbook of electrotherapy. 2nd ed. India: Jaypee; 2012*

### **THERAPEUTIC EXERCISES & TECHNIQUES CREDIT HOURS3(2-1)**

## **COURSE DESCRIPTION**

This course presents anatomical and physiological principles to allow students to develop integrated therapeutic exercise interventions. Students have the opportunity to develop an acquired understanding of physiological responses to various types of training and develop skills in prescription, implementation, and modeling of exercise programs. Exercise components of strength, aerobic/ anaerobic conditioning, flexibility, balance and stage of healing/rehabilitation are examined. Evidence of appropriate, safe and effective exercise design and proper exercise biomechanics and prescription parameters are addressed with all interventions. Exercise considerations for special populations and across the age span are covered. Concepts are presented in lecture and practiced in the laboratory

## **LEARNING OBJECTIVES**

- Defines & Explain types of physical therapy techniques and exercises
- Demonstrate best practices associated with injury and its rehabilitation
- Discuss strategies to improve movement and function, relieve pain and extend mobility potential.

## **COURSE CONTENTS**

### **THERAPEUTIC EXERCISE: FOUNDATIONAL CONCEPTS**

- Define Therapeutic exercise: impact on physical function
- Discuss Process and models of disablement
- Discuss Patient management and clinical decision making: an Interactive relationship
- Discuss Strategies for effective exercise and task-specific Instruction.

### **APPLIED SCIENCE OF EXERCISE AND TECHNIQUES**

- Define Range of motion, Types of ROM exercises, its Indications and goals.
- Discuss Limitations of ROM exercises with Precautions and contraindications.
- Describe Principles and procedures for applying ROM Techniques: Self-assisted ROM, continuous passive motion and ROM through functional patterns.

### **STRETCHING FOR IMPAIRED MOBILITY**

- Define terms related to mobility and stretching
- Discuss Properties of soft tissue—response to immobilization and stretch
- Discuss determinants, types, and effects of stretching interventions
- Describe Procedural guidelines for application of stretching interventions
- Explain Precautions during stretching
- Discuss Adjuncts to stretching interventions
- Explain Manual stretching techniques in anatomical planes of motion.

### **PERIPHERAL JOINT MOBILIZATION**

- Define terms: mobilization/manipulation, self-mobilization (auto-mobilization), mobilization with movement, physiological movements, accessory movements, thrust, manipulation under anesthesia, muscle energy
- Discuss Basic concepts of joint motion: arthro kinematics
- Discuss Indications and Limitations of joint mobilization techniques with its contraindications and precautions
- Discuss Procedures for applying passive joint mobilization techniques
- Discuss Mobilization with movement: principles of application
- Discuss Peripheral joint mobilization techniques including Shoulder Girdle Complex, Elbow and Forearm Complex, Wrist Complex, Hand and Finger Joints, Hip Joint, Knee and Leg, Ankle and Foot Joints.

### **RESISTANCE EXERCISE FOR IMPAIRED MUSCLE PERFORMANCE**

- Define Muscle performance
- Discuss types of resistance exercise with its guiding principles
- What are Determinants of an resistance exercise program
- Discuss General Principles of Resistance Training with Precautions For and Contraindications to resistance exercise
- Define Manual resistance exercise with its guidelines
- What are Physiological changes that occur with training
- Discuss Skeletal muscle function and its adaptation to resistance exercise
- Discuss special considerations, techniques with general background for upper extremity and lower extremity
- Describe Proprioceptive neuromuscular facilitation, its principles, procedures and basic and specific Techniques
- Discuss Diagonal patterns of PNF with reference to upper and lower extremity.
- Discuss Mechanical resistance exercise and its use in rehabilitation, conditioning programs with special considerations for children and older adults
- Discuss Selected resistance training regimens
- Discuss Equipment for resistance training

### **PRINCIPLES OF AEROBIC EXERCISE**

- Discuss Application of principles of an aerobic conditioning program for the patient with coronary disease for both inpatients and multiple phases of outpatient
- Discuss special considerations and adaptive changes
- Discuss Applications of aerobic training for the de-conditioned individual and the patient with chronic illness in different Age group.

### **AQUATIC EXERCISE**

- Define aquatic exercises with its Background and principles,
- identify Goals, indications, Precautions and contraindications to aquatic exercise
- Discuss Properties of water, Aquatic temperature and therapeutic exercise
- What are the Special equipment for aquatic exercise

- Discuss Exercise interventions using an aquatic environment such as stretching exercises, Strengthening Exercises and Aerobic Conditioning.

### **LAB WORK**

- Hands on skills of the following techniques:
- Range of Motion,
- Stretching
- Resisted exercise
- Peripheral joint mobilization.
- Aerobic exercises
- Balance training
- Hydrotherapy
- Reflective clinical case studies
- Supervised and independent applications of therapeutic techniques on patients in outdoor and indoor physiotherapy treatment settings.

### **Note**

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a reflective record of achievements. The log book shall also contain a record of the procedures which student performs/observes during course of study

### **RECOMMENDED BOOKS**

1. *Kisner C & Colby LA. Therapeutic exercise: foundations & techniques. 6<sup>th</sup> ed. Philadelphia: FA Davis; 2012.*
2. *Bandy WD & Sanders B. Therapeutic Exercise for physical therapist assistants: techniques for intervention. 3<sup>rd</sup> ed. Wolters Kluwer; 2012.*
3. *Sullivan PE and Markos PD. Clinical decision making in therapeutic exercise. Appleton & Lange; 1994.*
4. *Connolly BH & Montgomery P. Therapeutic exercise in developmental disabilities. 3<sup>rd</sup> ed. Slack; 2004.*

### **BIOSTATISTICS-I**

### **CREDIT HOURS 3(3-0)**

#### **COURSE DESCRIPTION**

It involves selection of appropriate statistical techniques to address questions of medical relevance; select and apply appropriate statistical techniques for managing common types of medical data; use various software packages for statistical analysis and data management; interpret the results of statistical analyses and critically evaluate the use of statistics in the medical literature; communicate effectively with statisticians and the wider medical community, in writing and orally through presentation of results of statistical analyses; explore current and anticipated developments in medical statistics.

#### **LEARNING OBJECTIVES**

- Discuss necessary concepts of statistics to enable them to realize a research project in the field of Physiotherapy
- Explain Fundamentals of reading and understanding research methods, design, and statistics.

## **COURSE CONTENTS**

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

### **STATISTICS**

- Define Statistics, Population, sample Descriptive and inferential Statistics, Observations, Data, Discrete and continuous variables, Errors of measurement, Significant digits, Rounding of a Number, Collection of primary and secondary data, Sources, Editing of Data. Exercises.

### **PRESENTATION OF DATA**

- Introduction, basic principles of classification and Tabulation, Constructing of a frequency distribution, Relative and Cumulative frequency distribution, Diagrams, Graphs and their Construction, Bar charts, Pie chart, Histogram, Frequency polygon and Frequency curve, Cumulative Frequency Polygon or Ogive, Histogram, Ogive for Discrete Variable. Types of frequency curves. Exercises.

### **MEASURES OF CENTRAL TENDENCY**

- Explain Different types of Averages, Quantiles, The Mode, Empirical Relation between Mean, Median and mode, Relative Merits and Demerits of various Averages. Properties of Good Average, Box and Whisker Plot, Stem and Leaf Display, definition of outliers and their detection. Exercises.

### **MEASURES OF DISPERSION**

- Describe Absolute and relative measures, Range, The semi-Inter-quartile Range, The Mean Deviation, The Variance and standard deviation, Change of origin and scale, Interpretation of the standard Deviation, Coefficient of variation, Properties of variance and standard Deviation, Standardized variables, Moments and Moments ratios. Exercises.

### **PROBABILITY AND PROBABILITY DISTRIBUTIONS**

- Define Discrete And Continuous Distributions: Binomial, Poisson And Normal Distribution. Exercises.

### **SAMPLING AND SAMPLING DISTRIBUTIONS**

- Describe sample design and sampling frame, bias, sampling and non-sampling errors, sampling with and without replacement, probability and non-probability sampling, Sampling distributions for single mean and proportion, Difference of means and proportions. Exercises.



### **RECOMMENDED BOOKS**

1. Walpole RE. *Students study guide: introduction to statistics*. 3rd ed. 1982.
2. Muhammad F. *Statistical methods and data analysis*. Faisalabad: KitabMarkaz; 2000
3. R. L Ott, Micheal T longnecker. *An introduction to statistical methods and data analysis*, 7th ed. Brooks/Cole, Cengage Learning 2015

## **BEHAVIOURAL SCIENCES (PSYCHOLOGY & ETHICS) CREDIT HOURS 2(2-0)**

### **COURSE DESCRIPTION**

This course is designed to increase awareness of psychosocial issues faced by individuals and their significant reference groups at various points on the continuum of health and disability. Personal and professional attitudes and values are discussed as they relate to developing therapeutic relationships. Communication skills are emphasized for effective interaction with clients, health-care professionals and others.

### **COURSE OBJECTIVES**

- Explain psychological and ethical factors that influence values about health promotion, wellness, illness and disability
- Demonstrate Skills to effective physical therapist-client relationship for better health care outcomes.

### **COURSE CONTENTS**

#### **INTRODUCTION OF BEHAVIORAL SCIENCES**

- Define Behavioral Sciences
- Discuss its importance in health
- Discuss Bio-Psycho-Social Model of Healthcare

#### **BEHAVIOR OF INDIVIDUAL**

- Nature/nurture debate
- Behaviorism and learning theories
- Behavioral modifications

#### **COGNITION**

- cognition
- cognitive development throughout lifespan

#### **SCIENCE OF RELATIONSHIP**

- Define and discuss communication skills, its types, modes, barriers and factors affecting
- Discuss Counseling: steps, scope, indication and contraindications in health setting
- Discuss conflict management: Dealing with real life crisis and conflict situations in health settings
- Discuss interviewing and its psychosocial factors in health care.
- Define clinician-patient / client relationship
- Discuss Concept of boundaries and psychological reactions in clinician – patient relationship such as transference and counter transference.
- Discuss Problem solving and decision making strategies in health care

- Terminally ill and home bound patients

**• STRESS MANAGEMENT**

- Define and classify of stress
- Discuss effects of stress on health and coping strategies
- Discuss Relationship of stress and stressors with illness
- Define Anxiety
- Discuss Psychological defense mechanisms, Adjustment and maladjustment

**ETHICS**

- Define ethics, medical ethics, and values, value system, virtues, mores, moral rules and morality
- Discuss ethical theories
- Discuss principle based approach for physical therapist in ethics such as;
  - Non-maleficence, beneficence, autonomy, fidelity, veracity, paternalism, and Justice.
- Discuss code of ethics for physical therapist
- Discuss ethical dimension of the physical therapist patient relationship, confidentiality, information sharing, and informed consent and ethical dilemmas

**APPLICATION OF BEHAVIORAL PRINCIPLES IN HEALTH AND DISEASE**

- Importance of psychological consideration in physical therapy management of
  - Mentally, emotionally and physically compromised patients

**RECOMMENDED BOOKS**

1. Rana MH, Ali S & Mustafa M. *A handbook of behavioral sciences for medical and dental students. 2nd ed. Lahore : university of health sciences; 2013.*
2. Dowrick C. *Medicine in society: behavioral sciences for medical students. CRC Press; 2001*
3. Billingham KA, Feldman HS & Lopez MA. *Developmental psychology for health care profession. Michigan: westviewpress ;1982.*
4. Purtilo RB & Doherty RF. *Ethical dimensions: in the health professions. 6th ed. St. Louis: Elsevier; 2016*
5. Veatch RM. *Medical ethics. 2nd ed. USA: Jones & Bartlett. 1997*

**SUPERVISED CLINICAL PRACTICE-I**

**CREDIT HOURS 3(0-3)**

**HISTORY TAKING**

| <b>SEMEST</b> | <b>SUPERVISI</b> | <b>FOC</b>        | <b>WARD</b>  | <b>COMPETENCI</b> |
|---------------|------------------|-------------------|--------------|-------------------|
| 5             | Supervised<br>by | History<br>Taking | All<br>wards | As listed below   |

**COURSE DESCRIPTION**

During this supervised clinical practice, students are responsible for learning the art of history taking, the first interaction with patient. Students learn the skills under supervision of trained physical therapists. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of patients (surgical, non-surgical, pediatric, geriatric, etc.).

The emphasis is placed on general history taking skills as well as its pertinence to all systems (musculoskeletal, Integumentary, cardiovascular, pulmonary, and neurological.) Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

### **CLINICAL COMPETENCIES**

- Review pertinent medical records and conduct an interview which collects the following data:
- Past and current patient/client history
- Demographics
- General health status
- Chief complaint
- Medications
- Medical/surgical history
- Social history
- Present and pre-morbid functional status/activity
- Social/health habits
- Living environment
- Employment
- Growth and development
- Lab values
- Imaging
- Consultations
- Documentation of the history.

### **Note**

It is mandatory for each student to document minimum 16 cases per semester (1 cases per week) in clinical log book duly checked and signed by clinical supervisor on weekly basis and head of institute at completion

## **SIXTH SEMESTER**

1. **PATHOLOGY & MICROBIOLOGY-II**
2. **PHARMACOLOGY & THERAPEUTICS-II**
3. **PHYSICAL AGENTS & ELECTROTHERAPY-II**
4. **BIostatISTICS II (University Optional)**
5. **COMMUNITY BASED MEDICINE & REHABILITATION**
6. **SUPERVISED CLINICAL PRACTICE - II**

### **PATHOLOGY & MICROBIOLOGY-II**

**CREDIT 3(2-1)**

#### **COURSE DESCRIPTION**

This course will cover the basic concepts, terminology, etiology, and characteristics of pathological processes. The course includes the diseases of the Integumentary System, Cardiovascular System, the Lymphatic System, the Respiratory System, the Nervous System, and Pathology of the musculoskeletal System, Pathology of Aging and medical microbiology. Also help the student to provide with a working knowledge of clinical pathology lab importance in Physical Therapy

#### **COURSE OBJECTIVES**

- Describe consequences of pathologic processes on the structure and function of the human body.
- Discuss selected disorders/diseases common to acute care in the physical therapy.

- Explain normal structure and function, in relation to disease processes in the physical therapy.

## **COURSE CONTENTS**

### **THE INTEGUMENTARY SYSTEM**

- Skin Lesions
- Signs and Symptoms of Skin Disease
- Aging and the Integumentary System
- Common Skin Disorders
- Skin Infections
- Skin Cancer
- Skin Disorders Associated With Immune Dysfunction
- Thermal Injuries
- Miscellaneous Integumentary Disorders.

### **THE CARDIOVASCULAR SYSTEM**

- Signs and Symptoms of Cardiovascular Disease
- Aging and the Cardiovascular System
- Gender Differences and the Cardiovascular System
- Diseases Affecting the Heart Muscle
- Disease Affecting the Cardiac Nervous System
- Diseases Affecting the Heart Valves
- Diseases Affecting the Pericardium
- Diseases Affecting the Blood Vessels
- Other Cardiac Considerations.

### **THE LYMPHATIC SYSTEM**

- Anatomy and Physiology
- Inflammation and Infection in the Lymphatic System.

### **THE RESPIRATORY SYSTEM**

- Aging and the Pulmonary System
- Infectious and Inflammatory Diseases
- Obstructive Diseases
- Environmental and Occupational Diseases
- Near Drowning
- Congenital Disorders
- Parenchymal Disorders
- Disorders of the Pulmonary Vasculature
- Disorders of the Pleural Space

## **PATHOLOGY OF THE MUSCULOSKELETAL SYSTEM**

### **INTRODUCTION TO PATHOLOGY OF THE MUSCULOSKELETAL SYSTEM**

- Advances in Musculoskeletal Biotechnology
- Biologic Response to Trauma
- Aging and the Musculoskeletal System
- The Musculoskeletal System and Exercise
- Musculoskeletal System Disease.

### **METABOLIC DISORDERS**

- Osteoporosis
- Osteomalacia
- Paget's disease.

### **INFECTIOUS DISEASES OF THE MUSCULOSKELETAL SYSTEM**

- Osteomyelitis
- Infections of Prostheses and Implants
- Diskitis
- Infectious (Septic) Arthritis

- Infectious (Inflammatory) Muscle Disease
- Extra pulmonary tuberculosis
- Summary of Special Implications for the Therapist.

### **MUSCULOSKELETAL NEOPLASMS**

- Primary Tumors
- Primary Benign Bone Tumours
- Primary Malignant Bone Tumours

### **PATHOLOGY OF THE NERVOUS SYSTEM**

#### **INTRODUCTION TO CENTRAL NERVOUS SYSTEM DISORDERS**

- Overview
- Pathogenesis
- Clinical Manifestations
- Diagnosis
- Treatment
- Prognosis.

#### **INFECTIOUS DISORDERS OF THE CENTRAL NERVOUS SYSTEM**

- Overview
- Meningitis
- Encephalitis
- Brain Abscess
- Prion Disease.

#### **CENTRAL NERVOUS SYSTEM NEOPLASMS**

- Primary Brain Tumours
- Specific Primary Brain Tumours
- Primary Intraspinal Tumours
- Metastatic Tumours
- Paraneoplastic Syndromes
- Leptomeningeal Carcinomatosis
- Pediatric Tumours.

#### **DEGENERATIVE DISEASES OF THE CENTRAL NERVOUS SYSTEM**

- Amyotrophic Lateral Sclerosis

- Multiple Myeloma
- Primary Soft Tissue Tumours
- Metastatic Tumours.

### **SOFT TISSUE, JOINT AND BONE DISORDERS**

- Soft Tissue
- Joint
- Bone.

- Alzheimer's Disease, Alzheimer's Dementia, and Variants
- Dystonia
- Huntington's Disease
- Multiple Sclerosis
- Parkinsonism and Parkinson's disease

### **STROKE**

- Stroke
- Vascular Disorders of the Spinal Cord.

### **MEDICAL MICROBIOLOGY**

#### **G +VE COCCI**

- Staphylococci
- Streptococci.

#### **G -VE COCCI**

- Neisseria.

#### **G +VE SPORE FORMING RODS**

- Bacillies
- Clostridia
- G -ve rods (introduction to Enterics)

#### **ACID FAST BACILLI**

- Mycobacteria.

#### **SPIROCHETES**

- Introduction
- Treponemes.

### **BASIC VIROLOGY**

- General characteristics
- Viral structure
- Nomenclature and classification.

### **.LAB WORK**

- To study the microscope
- To study the calcification
- To study the osteogenic sarcoma
- To study the granulation tissue
- To study the chronic inflammation (cholecystitis)
- To study the acute inflammation (appendicitis)
- To Fibroedema
- To study the carcinoma of breast
- To study the actinomycosis
- To study the culture media
- To study the gram staining
- To study the Z-N staining
- To study the giant cell tumour
- Examination of urine.

### **RECOMMENDED BOOKS**

1. *Pathology: implications for the Physical therapist* by: Catherine Cavallaro Goodman, 4<sup>th</sup> edition
2. *Basics & advanced Human Pathology* by Robbins 9<sup>th</sup> edition
3. *Lecture notes on Pathology* by Thomas and Cotton Published by Blackwell Scientific Publications, Oxford
4. *General Pathology* by Lord Howard Florey 4<sup>th</sup> edition by Lloyd-Luke (Medical Books) Ltd
5. *Medical Microbiology and Immunology* By: Levinson and Jawetz, 9th Ed., Mc Graw-Hill.

## **PHARMACOLOGY & THERAPEUTICS-IICREDIT HOURS 2(2-0)**

### **COURSE DESCRIPTION**

This course is designed to acquaint the students with the study of properties, effects, and therapeutic value of the primary agents in major drug categories. The topics include pharmacology of the respiratory system, gastrointestinal system, treatments of infectious diseases, and the drugs used in iontophoresis and phonophoresis

### **LEARNING OBJECTIVES**

### **MYCOLOGY**

- Introduction to mycology.

### **PARASITOLOGY**

- Introduction to protozoan

- Describe theoretical background of pharmacological treatment in physical therapy.
- Explain pharmacological background for clinical treatment of patient referred to physical therapy.
- Define basic principles and drugs for respiratory system, gastrointestinal system and disorders in endocrine system.
- Discuss basic principles and drugs of anti-microbial, antiviral drugs, immunosuppressive drugs and drugs used in iontophoresis and phonophoresis

## **COURSE CONTENTS**

### **RESPIRATORY AND GASTROINTESTINAL PHARMACOLOGY**

- Respiratory drugs
- Gastrointestinal Drugs.

### **ENDOCRINE PHARMACOLOGY**

- Introduction to Endocrine Pharmacology
- Adrenocorticosteroids
- Male and Female hormones
- Thyroid and Parathyroid Drugs; Agents affecting bone mineralization
- Pancreatic Hormones and the Treatment of Diabetes Mellitus.

### **CHEMOTHERAPY OF INFECTIOUS AND NEOPLASTIC DISEASES**

- Treatment of Infections; Antibacterial Drugs
- Treatment of Infections; Antiviral Drugs
- Treatment of Infections; Antifungal and Ant parasitic drugs
- Cancer Chemotherapy
- Immunomodulating Agents

### **DRUGS USED IN CURRENT PHYSICAL THERAPY PRACTICE**

- Drugs administered by Iontophoresis and Phonophoresis
- Potential Interactions between Physical Agents and Therapeutic drugs.

## **RECOMMENDED BOOK**

1. *Pharmacology in Rehabilitation (5<sup>th</sup> Edition-2015 )* By Charles D. Ciccone.
2. *Pharmacology, Richard A, Harvey, 3rd Edition, Lippincott's.*
3. *A Textbook of Clinical Pharmacology and Therapeutics, 5<sup>th</sup> Edition* by James Ritter 2012.

## **PHYSICAL AGENTS & ELECTROTHERAPY-IICREDIT HOURS 3(2-1)**

### **COURSE DESCRIPTION**

This course covers the basic principle of electrotherapy modalities used in physical therapy, including thermal, mechanical, physical agents and electromagnetic tools. Also help to understand the Indication, Contraindication and Methods of application in physical therapy.

### **LEARNING OBJECTIVES**

- Explain physiological basis of different modalities
- Discuss selection of appropriate modalities in different condition

- Demonstrate the application of thermal, mechanical & electromagnetic tools in different conditions

## **COURSE CONTENTS**

### **MEDIUM FREQUENCY CURRENT**

- Interferential Current
- Introduction, physical principles, electro-physiological effects
- Clinical applications, methods of application
- Treatment consideration & contraindications.

### **PHYSICS OF HEAT AND RADIATION**

- Definition of heat and temperature
- Physical effects
- Transmission of heat
- Radiant energy electromagnetic spectrum its production & properties
- Laws governing radiation.

### **INFRA-RED RAYS**

- Definition
- Production, luminous & non-luminous generators
- Physiological effects
- Therapeutic effects
- Uses
- Techniques of application
- Dangers and contraindications.

### **ULTRA VIOLET RAYS**

- Production, U.V. rays
- Mercury Vapour Lamp: Air cooled mercury vapour lamp & Kromayer lamp
- Fluorescent Tubes
- Penetration of rays into the skin
- Physiological effects (local & general)
- Therapeutic effects
- Sensitizers
- Assessment of doses
- Test dose

- Techniques of local and general radiation with special techniques of treatment of wounds
- Techniques with compression
- Dangers & precautions
- Contraindications.

### **HELIO THERAPY**

- Introduction
- Effects
- Uses
- Dangers and contraindications.

### **ULTRASONIC THERAPY**

- Introduction
- Production
- Physiological & therapeutic effects
- Uses, dangers, precautions & contraindications
- Techniques and application of treatment.

### **CRYOTHERAPY**

- Definition
- Methods
- Physiological & therapeutic effects
- Dangers, indications and precautions.

### **HYDROTHERAPY**

- Physiological principles of hydrotherapy
- Application of heat & cold
- Outline of methods of applying moist heat
- Medium used, contrast bath, paraffin baths, whirlpool baths,
  - techniques, effects, uses, dangers, contraindications of each



- The use of water as medium of each, the use of water as a medium of movement pool therapy
- Immersion baths, full, plain and medicated, partial baths, packs, general local methods of application
- Hot air, vapors, the care of patients in hydrological department
- Detailed description of indication of hydrotherapy.

### **TRACTION**

- Effects of spinal traction
- Clinical indications for the use of spinal traction
- Contraindications and precautions for spinal traction
- Adverse effects of spinal traction
- Application technique.

### **COMPRESSION**

- Effects of External Compressions
- Clinical indications for the Use of External Compression
- Contraindications and Precautions of External Compression
- Contraindications for the Use of Intermittent or Sequential Compression Pumps
- Precautions for the Use of Intermittent or Sequential Compression Pumps
- Adverse Effects of External Compression
- Application Techniques.

### **LASER THERAPY**

- Definition
- Properties of laser

### **LAB WORK**

- The practical training will be practiced in physiotherapy treatment ward under the supervision of qualified physiotherapists.

- Production of Lasers
- Types of Lasers
- Techniques of application
- Dosage parameters
- Interaction of laser with body tissues
- Physiological and therapeutic effects of lasers
- Dangers and contraindications
- Methods of Treatment.

### **BIOFEED BACK**

- Introduction
- Indications
- Contra-Indications
- Types of Biofeedback
- Advantages
- Disadvantages

### **SHOCKWAVE THERAPY**

- Physiology
- Indications
- Method of Application
- Contra-Indications

### **WAX THERAPY**

- Characteristics of Paraffin Wax
- Care of Apparatus
- Physiological Effects
- Indications
- Contra-Indications
- Advantages
- Disadvantages
- Method of Application

### **MAGNETIC THERAPY**

- Indications
- Contra-Indications
- Method of Application

- Practical application of Interferential therapy
- Practical application of Infra-red rays
- Practical application of ultrasound including Phonophoresis
- Supervised application of Ultraviolet rays including determination of test dosage
- Practical application of Cold packs
- Supervised application of Wax therapy
- Practical application of Infra-red Rays
- Practical application of Mechanical traction
- Supervised application of Hot packs, Electric Heating pads
- Paraffin Wax bath application
- Practical application of SWD
- Practical application of LASER
- Supervised application of Shock wave therapy
- Practical application of Magnetic therapy
- Demonstration of techniques during practical classes, later on techniques practiced by students on patients attending the department under supervision of trained physiotherapists.

### **Note**

The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed.

### **RECOMMENDED BOOKS**

1. *Clayton's Electrotherapy and Actinotherapy, 10<sup>th</sup> edition by PM Scott.*
2. *Electrotherapy: Evidence based Practice, 11<sup>th</sup> edition by Shelia Kitchen.*
3. *Michelle H Cameron's Physical Agent in Rehabilitation: From research to Practice.*
4. *Electrotherapy and Electrodiagnosis by S. Lient.*
5. *Applications of Shortwave Diathermy by P. M. Scott.*
6. *Practical Electrotherapy by Savage.*
7. *Textbook of Electrotherapy & Practical application by Jagmohen Singh 2<sup>nd</sup> Edition*

## **BIOSTATISTICS-II (UNIVERSITY OPTIONAL)CREDIT HOURS 3(3-0)**

### **COURSE DESCRIPTION**

The course is designed to provide the students with the necessary concepts of statistics to enable them to realize a research project in the field of Physiotherapy. It involves selection of appropriate statistical techniques to address questions of medical relevance; select and apply appropriate statistical techniques for managing common types of medical data; use various software packages for statistical analysis and data

management; interpret the results of statistical analyses and critically evaluate the use of statistics in the medical literature; communicate effectively with statisticians and the wider medical community, in writing and orally through presentation of results of statistical analyses; explore current and anticipated developments in medical statistics. It is designed to teach entry-level physical therapy students the fundamentals of reading and understanding research methods, design, and statistics.

### **LEARNING OBJECTIVES**

- The course aims to shape the attitudes of learners regarding the field of Statistics. Specifically, the course aims to
- Motivate in students an intrinsic interest in statistical thinking.
- Instill the belief that Statistics is important for scientific research.
- Provide a foundation and motivation for exposure to statistical ideas subsequent to the course.
- Demonstrate the ability to apply fundamental concepts in exploratory data analysis.
- Design studies for obtaining data whilst avoiding common design flaws that incur bias, inefficiency and confounding.
- Demonstrate an understanding of the basic concepts of probability and random variables.
- Understand the concept of the sampling distribution of a statistic, and in particular describe the behavior of the sample mean.
- Apply inferential methods relating to the means of Normal distributions.
- Apply and interpret basic summary and techniques for data and use inferential methods.

### **COURSE CONTENTS**

#### **HYPOTHESIS TESTING**

- Introduction, Statistical problem, null and alternative hypothesis, Type-I and Type-II errors, level of significance, Test statistics, acceptance and rejection regions, general procedure for testing of hypothesis. Exercises.

#### **TESTING OF HYPOTHESIS- SINGLE POPULATION:**

- Introduction, testing of hypothesis and confidence interval about the population mean and proportion for small and large samples, Exercises.

#### **TESTING OF HYPOTHESES-TWO OR MORE POPULATIONS:**

- Introduction, Testing of hypothesis and confidence intervals about the difference of population means and proportions for small and large samples, Analysis of Variance and ANOVA Table. Exercises.

**TESTING OF HYPOTHESIS-INDEPENDENCE OF ATTRIBUTES** Introduction, Contingency Tables, Testing of hypothesis about the Independence of attributes.Exercises.

### **REGRESSION AND CORRELATION:**

- Introduction, cause and effect relationships, examples, simple linear regression, estimation of parameters and their interpretation.  $r$  and  $R^2$ . Correlation. Coefficient of linear correlation, its estimation and interpretation. Multiple regression and interpretation of its parameters. Examples,

### **RECOMMENDED TEXT BOOKS**

- Walpole, R. E. 1982. —Introduction to Statistics", 3<sup>rd</sup> Ed., Macmillan Publishing Co., Inc. New York. Muhammad, F. 2005.
- Statistical Methods and Data Analysis", KitabMarkaz, Bhawana Bazar Faisalabad.

## **COMMUNITY BASED MEDICINE & REHABILITATION CREDIT HOIURS 3(3-0)**

### **COURSE DESCRIPTION**

This course is designed for the Physical Therapy students in order to develop strong background knowledge regarding the community health, wellbeing and community based rehabilitation. It also gives knowledge about the issues of community health, policies and procedures for their effective rehabilitation management. It provide awareness about the problems faced by people in community at all levels and effective strategies to solve these issues

### **LEARNING OBJECTIVES**

- Describe impact of environmental, biological, social and behavioral risk factors on health and disease through the epidemiologic methods.
- Discuss agent, host and environmental factors determining health and disease.
- Describe complete nutritional assessment of individual using clinical, Anthropometric and diet survey tools
- Discuss the community health, diagnosis and to take remedial measure for improving community health
- Discuss various types of disabilities existing in special children

### **COURSE CONTENTS**

#### **COMMUNITY BASED MEDICINE**

##### **INTRODUCTION**

- History of Community medicine & rehabilitation
- Definition, concept of Health & illness of diseases
- Natural History of diseases, levels & prevention.

#### **ENVIRONMENTAL SANITATION & MEDICAL ENTOMOLOGY**

- water

- waste disposal
- Environmental problems & pollution.

#### **GENETICS**

- Prevention of genetic diseases
- Genetic counseling.

#### **GENERAL EPIDEMIOLOGY**

##### **DESCRIPTIVE EPIDEMIOLOGY**

- Time
- Place
- Person.

##### **ANALYTICAL EPIDEMIOLOGY**

- Case control
- Cohort studies.

**EXPERIMENTAL EPIDEMIOLOGY  
RANDOMIZED CONTROL TRIAL  
SYSTEMIC EPIDEMIOLOGY**

- Vector borne diseases
- Water borne diseases
- Air borne diseases
- Contact diseases
- Diseases of major public health and its importance along with national health programs wherever Applicable

**NON-COMMUNICABLE DISEASES**

- Diabetes
- Hypertension
- Heart diseases
- Blindness
- Accidents
- Geriatric problems.

**OCCUPATIONAL HEALTH  
PROBLEMS**

- M.C.H. and family welfare Programmes
- Health care delivery in the community
- National Health Policy
- National Health programmes including
- Rehabilitation, Evaluation of Health
- Programmes, Health Planning Organization.

**STRUCTURE OF HEALTH CARE  
SYSTEM IN THE COUNTRY**

- P. H. C. district level
- State level and central level.
- P. H. C. Organization and Function
- Role of Non-Governmental Organization.

**HEALTH EDUCATION**

- Principles of Health Promotion
- Methods, approaches and media for
- I. E. C (Information, Education & Communication)
- Medical and Health/Information system
- Mental Health
- Nutrition.

**COMMUNITY BASED  
REHABILITATION HEALTH IN THE  
COMMUNITY**

- Handicap and the community
- Nutrition and mal nutrition
- Breast feeding
- Immunization
- Oral rehydration.

**NORMAL BODY FUNCTION**

- Normal development
- Growth and weight of children.

**CONDITIONS AND TREATMENTS**

- Cerebral palsy in children
- Down syndrome
- Mental handicap
- Hydrocephalus
- Spin bifida
- Poliomyelitis
- Blindness
- Deafness
- Strokes
- Spinal cord injuries
- Amputation.

**MANAGEMENT OF PATIENTS**

- Assessment and recoding
- Fits
- Contractures
- Pressure sores

- Urine and bowel management
- Chest infection
- Feeding children with cerebral palsy
- Toy making workshop
- Welfare assistance.

**RECOMMENDED BOOKS**

1. Textbooks of Community Medicine, by Prof. H. A. Siddique (2<sup>nd</sup> Edition).
2. Parks text book of preventive & social medicine –K Park.
3. *Community based rehabilitation worker manual, marionloveday, global health publication*
4. *Introduction to Special Education* By: Allen and Beacon,(1992), A Simon &SuperterComp.Needham Heights
5. *Exceptional Children and Adults*, Patton, J.R. (1991); Boston Scott Foresmen and Co.
6. *Exceptional Children in Focus* by: Patton J.R. (1991); New York, Macmillan pub. Co

**SUPERVISED CLINICAL PRACTICE-IICREDIT HOURS 3(0-3)**

**SYSTEMS REVIEW**

| SEMESTE | SUPERVISI            | FOCUS                 | WARDS        | COMPETENCI      |
|---------|----------------------|-----------------------|--------------|-----------------|
| 6       | SUPERVIS<br>ED<br>BY | SYSTEM<br>S<br>REVIEW | ALL<br>WARDS | LISTED<br>BELOW |

**COURSE DESCRIPTION**

During this supervised clinical practice, students are responsible for learning the skills of systems review and validate the need for physical therapy services. Students learn to objectively review each system under the supervision of trained physical therapists. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of patients (surgical, non-surgical, pediatric, geriatric, etc.) Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

**CLINICAL COMPETENCIES**

- Perform review of systems to determine the need for referral or for physical therapy services.
- Systems review screening includes the following.

**GENERAL HEALTH CONDITION (GHC)**

- Fatigue
- Malaise
- Fever/chills/sweats
- Nausea/vomiting
- Dizziness/lightheadedness

- Unexplained weight change
- Numbness/Paresthesia
- Weakness
- Mentation/cognition.

**CARDIOVASCULAR SYSTEM (CVS)**

- Dyspnea

- Orthopnea
- Palpitations
- Pain/sweats
- Syncope
- Peripheral edema
- Cough.

### **PULMONARY SYSTEM (PS)**

- Dyspnea
- Onset of cough
- Change in cough
- Sputum
- Hemoptysis
- Clubbing of nails
- Stridor
- Wheezing.

### **GASTROINTESTINAL SYSTEM (GIS)**

- Difficulty with swallowing
- Heartburn, indigestion
- Change in appetite
- Change in bowel function

### **URINARY SYSTEM (US)**

- Frequency
- Urgency
- Incontinence.

### **GENITAL REPRODUCTIVE SYSTEM (GRS) MALE**

- Describe any sexual dysfunction, difficulties, or concerns.

### **FEMALE**

- Describe any sexual or menstrual dysfunction, difficulties, or problems.

### **RECOGNITION OF RED AND YELLOW FLAGS**

- Initiate referral when positive signs and symptoms identified in the review of systems are beyond the

### **Note**

specific skills or expertise of the physical therapist or beyond the scope of physical therapist practice

- Consult additional resources, as needed, including other physical therapists, evidence-based literature, other health care professionals, and community resources
- Screen for physical, sexual, and psychological abuse.

### **CARDIOVASCULAR AND PULMONARY SYSTEMS**

- Conduct a systems review for screening of the cardiovascular and pulmonary system (heart rate and rhythm, respiratory rate, blood pressure, edema)
- Read a single lead EKG.

### **INTEGUMENTARY SYSTEM**

- Conduct a systems review for screening of the integumentary system, the assessment of pliability (texture), presence of scar formation, skin color, and skin integrity.

### **MUSCULOSKELETAL SYSTEM**

- Conduct a systems review for screening of musculoskeletal system, the assessment of gross symmetry, gross range of motion, gross strength, height and weight.

### **NEUROLOGICAL SYSTEM**

- Conduct a systems review for screening of the neuromuscular system, a general assessment of gross coordinated movement (balance, gait, locomotion, transfers, and transitions) and motor function (motor control and motor learning).
- Documentation of all listed competencies in SOAP notes format

It is mandatory for each student to document minimum 16 cases per semester (1 cases per week) in clinical log book duly checked and signed by clinical supervisor on weekly basis and head of institute at completion

## SEVENTH SEMESTER

1. **MEDICINE - I**
2. **SURGERY - I**
3. **RADIOLOGY & DIAGNOSTIC IMAGING**
4. **MUSCULOSKELETAL PHYSICAL THERAPY**
5. **EVIDENCE BASED PRACTICE**
6. **SUPERVISED CLINICAL PRACTICE-III**

### MEDICINE-ICREDIT HOURS 3(3-0)

#### COURSE DESCRIPTION

This course intends to familiarize students with medical terminology and abbreviations for efficient and effective chart reviewing and documentation. It also explores systemic diseases, focusing on epidemiology, pathology, histology, etiology, as well as primary and secondary clinical characteristics and their management.

#### LEARNING OBJECTIVES

- Describe medical terminologies, abbreviations, epidemiology, etiology, primary and secondary clinical characteristics of Cardiovascular, Rheumatology and bone, and Respiratory diseases.
- Explain briefly an overview of medical management of listed diseases/disorders.

#### COURSE CONTENTS

##### CARDIOVASCULAR DISEASES

##### CARDIAC DISEASES

- Chest pain
- Dyspnoea
- Palpitation
- Peripheral edema
- Syncope
- Cardiac failure
- Acute pulmonary edema
- Cardiogenic shock
- Systemic hypertension
- Ischemic heart disease
- Angina pectoris
- Unstable angina
- Myocardial infarction
- Rheumatic fever
- Valvular heart diseases
- Congenital heart diseases

- Ventricular septic defect
- Atrial septal defect
- pulmonary heart disease
- Pericardial disease
- Pulmonary hypertension
- Cardiac arrhythmias and heart in pregnancy.

##### VASCULAR DISEASES

- Arteriosclerosis
- Acute & Chronic ischemia of leg
- Aortic aneurysm
- Buerger's disease
- Raynaud's disease
- Varicose veins
- Venous thrombosis.



## **RHEUMATOLOGY AND BONE DISEASES: ARTHRITIS**

- Osteoarthritis
- Rheumatoid arthritis
- Connective tissue diseases
- Arthritis in elderly
- Arthritis in children,
- Seronegativespondyloarthropathies
- Crystals deposition disease
- Arthritis associated with other diseases.

## **BACK PAIN**

- Back Pain due to serious disease
- Inflammatory Back Pain
- Disc disease
- Mechanical problems
- Soft tissues problems
- Psychogenic Back Pain
- Nonspecific Back Pain
- Neck pain.

## **SOFT TISSUE RHEUMATISM: BONE DISEASES**

- Paget's disease
- Infections of bones
- Neoplastic disease
- Skeletal dysplasia
- Other hereditary diseases.

## **RESPIRATORY DISEASES**

## **DISEASES OF UPPER RESPIRATORY TRACT**

- Common cold
- Sinusitis
- Rhinitis
- Pharyngitis
- Acute laryngo-tracheobronchitis
- Influenza
- Inhalation of the foreign bodies.

## **DISEASE OF LOWER RESPIRATORY TRACT**

- Acute & chronic Bronchitis
- Bronchiectasis
- Cystic fibrosis
- Asthma
- Emphysema
- Pneumonias
- Tuberculosis
- Pulmonary fibrosis
- Radiation damage
- Common tumours of the lungs
- Respiratory failure
- Adult distress respiratory syndrome
- Disorders of chest wall and pleura
- Chest trauma
- Deformities of rib cage
- Dry pleurisy
- Pleural effusion
- Empyema
- Pneumothorax.

## **RECOMMENDED BOOKS**

1. *Practice of medicine by: Davidson.*
2. *Clinical medicine by: Parveen j Kumar & Michael Clark.*
3. *Short text book of medicine by: M. Inam Danish.*
4. *Hutchison's clinical methods by: Michael swash. 21<sup>st</sup> edition.*
5. *Bed side techniques.*

## **SURGERY-ICREDIT HOURS 3(3-0)**

### **COURSE DESCRIPTION**

This course intends to familiarize the students with principles of orthopaedic surgery along with detail description of surgical terminologies and abbreviations for efficient and effective chart reviewing and documentation. It also explores various orthopaedic

conditions needing surgical attention, focusing on epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical management.

## LEARNING OBJECTIVES

- Describe in detail surgical terminologies, abbreviations, etiology, primary and secondary clinical characteristics, classifications, indications and complications for surgeries listed orthopedic conditions
- Explain briefly an overview of surgical management of the listed conditions.

## COURSE CONTENTS

### ORTHOPEDIC SURGERY

#### FRACTURES

- Definition
- Classification
- Causes
- Clinical features
- Healing of fractures
- Complications
- Principles of general management of
- Fracture of the Upper Extremity
- Fracture of the Lower Extremity
- Fracture of the vertebral column, thorax and pelvis
- Basic and advanced trauma life support.

#### DISLOCATIONS & SUBLUXATIONS

- Definition
- Traumatic dislocation
- General description
- Principles of general description & management of traumatic dislocation/subluxation of;
  - Shoulder joint
  - Acromioclavicular joint
  - Elbow joint
  - Hip joint
  - Knee joint.

#### SOFT TISSUE INJURIES

- Introduction

- Anatomy & physiology general description and management of injuries of:
  - Ligaments
  - Tendons
  - Muscles
  - Fascia
  - Bursae
  - Detailed description of physiotherapy management of individual tissue injuries around:
    - Shoulder region
    - Elbow region
    - Wrist and hand region
    - Knee region
    - Ankle region
    - Muscles and tendons injuries of upper and lower limb
    - Cervico-lumber injuries
    - Whiplash of the cervical spine
    - Crush injuries
    - Spinal pain
    - Degenerative and Inflammatory Conditions:
      - Osteo-orthosis/Arthritis
      - Spondylosis
      - Spondylolysis
      - Pyogenic arthritis
      - Rheumatoid arthritis
      - Juvenile arthritis
      - Tuberculosis arthritis
      - Gouty arthritis
      - Haemophilic arthritis
      - Neuropathic arthritis
      - Ankylosing spondylitis
      - Psoriatic arthritis.

## GENERAL DISORDERS

- Carpel tunnel syndrome
- Compartment syndromes
- Muscular dystrophies
- Neuropathies
- Avascular necrosis of bone in adult and children
- Ischemic contracture
- Gangrene
- Rickets
- Osteoporosis and osteomalacia
- Shoulder pain
- Neck pain
- Knee pain
- Backache
- Painful conditions around elbow
- Detailed description of :
  - Orthotics
  - Prosthetics
  - Splintage
  - Traction
  - POP

## TUMOURS

- Classification
- Principles of general management
- General description of benign and malignant tumors of musculoskeletal system

## DEFORMITIES AND ANOMALIES

- Definition
- Causes
- Classification
- Congenital and acquired deformities
- Physical and clinical and radiological features
- Complications

- Principles of medical and surgical management of the deformities
- General description of following deformities.

## DEFORMITIES OF THE SPINE

- Torticollis
- Scoliosis
- Kyphosis
- Lordosis
- Flat back.

## DEFORMITIES OF THE LOWER LIMB

- CDH
- Coxavegia
- Coxavalga
- Anteversion
- Retroversion
- Genu valgum
- Genu varum
- Genu recurvatum
- CDK
- Talipes calcaneus equinus, varus & valgus
- Talipes calcaneovarus
- Talipes calcaneovalgus
- Talipes equinovarus
- Pes cavus
- Pes planus
- Hallux valgus & varum,
- Hallux rigidus and hammer toe.

## DEFORMITIES OF SHOULDER AND UPPER LIMB

- Sprengel's shoulder
- Cubitus varum
- Cubitus valgum
- De Quervain's contracture.

## RECOMMENDED BOOKS

1. *Short practice of surgery by Baily and Love's.*
2. *Text Book of Surgery by Ijaz Ahsan.*
3. *Outline of Fractures.*

## **RADIOLOGY & DIAGNOSTIC IMAGING CREDIT HOURS 3(2-1)**

### **COURSE 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.

### **LEARNING OBJECTIVES**

- Describe in detail examination and understanding of radiological imaging (X-Rays) of Extremities, Spine and Chest.
- Explain briefly an overview of radiological imaging including Mammography, Fluoroscopy, Computer Tomography, Magnetic Resonance Imaging, Ultrasound, Endoscopy, Nuclear Medicine and Interventional Radiology.
- Explain briefly indications to prescribe X-Rays, Mammography, MRI and Ultrasound.

### **COURSE CONTENTS**

#### **FROM THE WATCHING OF SHADOWS**

- History
- A New Kind of Ray
- How a Medical Image Helps
- What Imaging Studies Reveal
- Radiography( x-rays )
- Fluoroscopy
- Computed Tomography (CT)
- Magnetic Resonance Imaging (MRI)
- Ultrasound
- Endoscopy.

#### **RADIOGRAPHY AND MAMMOGRAPHY**

- Equipment components
- Procedures for Radiography & Mammography
- Benefits versus Risks and Costs
- Indications and contraindications.

#### **FLUOROSCOPY**

- Fluoroscopy
- Equipment used for fluoroscopy
- Indications and Contra indications
- How it helps in diagnosis
- The Findings in Fluoroscopy
- Benefits versus Risks and Costs

#### **COMPUTED TOMOGRAPHY (CT)**

- Computed Tomography
- Equipment used for Computed Tomography
- Indications and Contra indications
- How it helps in diagnosis
- The Findings in Computed Tomography
- Benefits versus Risks and Costs

#### **MAGNETIC RESONANCE IMAGING (MRI)**

- MRI
- Equipment used for MRI
- Indications and Contra indications
- How it helps in diagnosis
- The Findings in MRI
- Benefits versus Risks and Costs
- Functional MRI.

#### **ULTRASOUND**

- What is Ultrasound?
- Equipment used for Ultrasound
- Indications and Contra indications
- How it helps in diagnosis
- The Findings in Ultrasound
- Benefits versus Risks and Costs.

#### **ENDOSCOPY**

- Endoscopy
- Equipment used for Endoscopy
- Indications and Contra indications
- How it helps in diagnosis
- The Findings in Endoscopy
- Benefits versus Risks and Costs.
- Equipment used for Nuclear Medicine
- Indications and Contra indications
- How it helps in diagnosis.
- Benefits versus Risks and Costs.

## INTERVENTIONAL RADIOLOGY

### NUCLEAR MEDICINE

- Nuclear Medicine

### RECOMMENDED BOOKS

1. *Looking Within (How X-ray, CT, MRI, Ultrasound and Other Medical Images Created and How They Help Physicians Save Lives)* by Anthony Brinton Wolbarst.
2. *A–Z of Musculoskeletal and Trauma Radiology* By: James R. D. Murray.
3. *Essentials of Radiology* by Fred. A. Mettler, 2<sup>nd</sup> edition.
4. *Imaging in rehabilitation*, By: Terry. R. Malone, Charles Hazle & Michael L. Grey. McGraw Hill Publishers.

## MUSCULOSKELETAL PHYSICAL THERAPY CREDIT HOURS 3(2-1)

### COURSE DESCRIPTION

This course includes a study of applied anatomy and physiology of the musculoskeletal system and pathological changes of the system and function, including diagnostic tests and measurements. The use of evidence-based physical therapy intervention for musculoskeletal conditions will be emphasized. The course will focus on medical terminologies, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in the area of musculoskeletal physical therapy

### LEARNING OBJECTIVES

- Describe in detail applied anatomy and physiology of the musculoskeletal system.
- Explain physiotherapy terminologies regarding musculoskeletal system.
- Describe in detail principles and concepts of musculoskeletal physical therapy examination, evaluation, assessment, documentation and management.

### COURSE CONTENTS

#### MEDICAL TERMINOLOGY REGARDING MUSCULOSKELETAL SYSTEM PRINCIPLES AND CONCEPTS OF MUSCULOSKELETAL EVALUATION & ASSESSMENT

- Patient history
- Observation

- Examination
- Principles, vital signs, examination of specific joints, functional assessment, specific diagnostic test, reflexes and cutaneous distribution, joint play movements, palpation
- Evaluation /Assessment of spine and peripheral joints
- Causes
- Effects of range limitation on functional activities
- Principles of assessment and outcome measures
- Documentation in SOAP notes format
- Evidence based musculoskeletal Physical Therapy Treatment protocols

## **PRINCIPLES OF INTERVENTION**

### **SOFT TISSUE INJURY, REPAIR, AND MANAGEMENT**

- Soft tissue lesions
- Management during the acute stage
- Management during the sub-acute
- Management during the chronic stage
- Cumulative trauma–chronic recurring pain

### **JOINT, CONNECTIVE TISSUE, AND BONE DISORDERS AND MANAGEMENT**

- Arthritis–arthrosis
- Fibromyalgia and myofascial pain syndrome
- Osteoporosis
- Fractures–post-traumatic immobilization.

### **SURGICAL INTERVENTIONS AND POSTOPERATIVE MANAGEMENT**

- Indications for surgical intervention
- Guidelines for preoperative and Postoperative management; considerations for preoperative management, considerations for postoperative management, potential postoperative complications
- Overview of common orthopedic surgeries and postoperative management; surgical approaches–open, arthroscopic, and arthroscopically assisted procedures, use of tissue grafts, repair, reattachment, reconstruction, stabilization, or transfer of soft tissues, release, lengthening, or decompression of Soft tissues.

### **EXERCISE INTERVENTIONS BY BODY REGION**

#### **THE SPINE AND POSTURE: STRUCTURE, FUNCTION, POSTURAL IMPAIRMENTS & MANAGEMENT GUIDELINESPOSTURE AND BIOMECHANICAL INFLUENCES**

- Alignment
- Stability.

### **IMPAIRED POSTURE**

- Etiology of pain
- Common faulty postures: characteristics and Impairments.

### **MANAGEMENT OF IMPAIRED POSTURE**

- General management guidelines
- Tension headache/cervical headache.

### **THE SPINE: IMPAIRMENTS, DIAGNOSES, & MANAGEMENT GUIDELINES**

- Review of the structure and function of the spine.

### **SPINAL PATHOLOGIES AND IMPAIRED SPINAL FUNCTION**

- Pathology of the intervertebral disk
- Pathomechanical relationships of the intervertebral disk and facet joints
- Pathology of the zygapophyseal (facet)
- Pathology of muscle and soft tissue injuries: strains, tears, and contusions
- Pathomechanics of spinal instability.

### **MANAGEMENT GUIDELINES BASED ON IMPAIRMENTS**

- Principles of management for the Spine
- Management guidelines–non-weight-bearing bias
- Management guidelines–extension bias
- Management guidelines–flexion bias
- Management guidelines–stabilization
- Management guidelines–mobilization
- Management guidelines–soft tissue injuries
- Management Guidelines–Temporomandibular Joint Dysfunction.

### **THE SPINE: EXERCISE INTERVENTIONS**

- Basic concepts of spinal management with exercise
- Fundamental interventions
- Patient education
- General exercise guidelines
- Kinesthetic awareness
- Elements of kinesthetic training–fundamental techniques
- Progression to active and habitual control of Posture
- Mobility/flexibility
- Cervical and upper thoracic
- Region–stretching techniques
- Mid and lower thoracic and lumbar
- Regions–stretching techniques
- Muscle performance: stabilization, muscle endurance, and strength training
- Stabilization training–fundamental techniques and Progressions
- Isometric and dynamic exercises
- Cardiopulmonary endurance
- Common aerobic exercises and effects on the spine
- Functional activities

- Early functional training—fundamental techniques
- Preparation for functional activities—basic exercise Techniques
- Body mechanics and environmental adaptations
- Intermediate to advanced exercise techniques for Functional training
- Education for prevention.

### **THE SHOULDER AND SHOULDER GIRDLE**

- Examination, evaluation and assessment of shoulder joint
- Referred pain and nerve injury
- Management of shoulder disorders and surgeries
- Joint Hypomobility: non-operative management
- Glenohumeral joint surgery and postoperative management
- Painful shoulder syndromes (rotator cuff disease, impingement syndromes, shoulder instabilities):
  - Non-operative management
  - Painful shoulder syndromes: surgery and postoperative management
  - Shoulder dislocations: non-operative management
  - Shoulder instabilities: surgery and post-operative management
- Exercise interventions for the shoulder
- Girdle Exercise Techniques During Acute And Early Subacute Stages of tissue healing
- Exercise techniques to increase flexibility and range of motion
- Exercises to develop and improve muscle performance and functional control.

### **THE ELBOW & FOREARM COMPLEX**

- Examination, evaluation and assessment of elbow and forearm complex
- Referred pain and nerve injury in the elbow region
- Management of elbow and forearm disorders and surgeries
- Joint Hypomobility: nonoperative management
- Joint surgery and postoperative management
- Myositis ossificans
- Overuse syndromes: repetitive trauma syndromes
- Exercise interventions for the elbow and Forearm
- Exercise techniques to increase flexibility and range of Motion
- Exercises to develop and improve muscle performance and functional.

### **THE WRIST & HAND**

- Examination, evaluation and assessment of wrist and hand
- Major nerves subject to pressure and trauma at the Wrist and hand
- Management of wrist and hand disorders And surgeries
- Joint Hypomobility: non-operative management
- Joint surgery and postoperative management
- Repetitive trauma syndromes/overuse
- Traumatic lesions in the wrist and hand
- Exercise interventions for the wrist and Hand



- Techniques for musculotendinous mobility
- Exercise techniques to increase flexibility and range Of motion
- Exercises to develop and improve muscle Performance, neuromuscular control, and coordination.

### **THE HIP**

- Examination, evaluation and assessment of hip joint
- The hip and gait
- Referred pain and nerve injury
- Management of hip disorders and surgeries
- Joint Hypomobility: non-operative management
- Joint surgery and post-operative management
- Fractures of the hip—surgical and postoperative management
- Painful hipsyndromes/overuse syndromes:non-operative management
- Exercise interventions for the hip region
- Exercise techniques to increase flexibility and range of motion
- Exercises to develop and improve muscle performance and functional control.

### **THE KNEE**

- Examination, evaluation and assessment of knee joint
- Referred pain and nerve injuries
- Management of knee disorders and surgeries
- Joint Hypomobility: non-operative management
- Joint surgery and post-operative management
- Patellofemoral dysfunction: non-operative management
- Patellofemoral and extensor mechanism dysfunction: Surgical and postoperative management
- Ligament injuries: non-operative management
- Ligament injuries: surgical and postoperative Management
- Meniscal tears: non-operative management
- Meniscal tears: surgical and postoperative management
- Exercise interventions for the knee
- Exercise techniques to increase flexibility and range of motion
- Exercises to develop and improve muscle performance and functional control.

### **THE ANKLE & FOOT**

- Examination, evaluation and assessment of ankle and foot joint
- Referred pain and nerve injury
- Management of foot and ankle disorders and surgeries
- Joint Hypomobility: non-operative management
- Joint surgery and post-operative management
- Overuse (repetitive trauma) syndromes: non-operative management
- Ligamentous injuries: non-operative management
- Traumatic soft tissue injuries: surgical and postoperative management
- Exercise interventions for the ankle and foot
- Exercise techniques to increase flexibility and range of motion

- Exercises to develop and improve muscle performance and functional control

### LAB WORK

- The practical training will be sought in physiotherapy treatment based settings. Keeping in view therapeutic principles, management of various pre and post-operative conditions will be practiced under supervision and later independently by the students, the practical work might include Therapeutic Management of conditions of spine, and extremities.
- Reflective clinical case studies
- Supervised and independent Practical application of therapeutic techniques on patients in outdoor and indoor physiotherapy treatment settings.
- **Note:** The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed.

### RECOMMENDED BOOKS

1. *Therapeutics Exercises and Technique*, By: Carolyn Kisner & Lynn Allen Colby 4th 5th edition.
2. *Therapeutics Exercises: Techniques for Intervention* By: Willim D. Bandy.
3. *Clinical decision making in therapeutic exercise* By: Patricia e. Sullivan & prudence d. Markos, Appleton & Lange Norwalk, Connecticut.
4. Hertling, D, and Kessler RM. *Management of Common Musculoskeletal Disorders: Physical Therapy Principles and Methods*. 3<sup>rd</sup> ed. Philadelphia, PA: WB Saunders 1995.
5. *Orthopaedic Physical Therapy* By: Donatelli & Michael J. Wooden 4th Edition.
6. *Physiotherapy in Orthopaedics, A problem-solving approach* By: Atkinson, Coutts & Hassenkamp 2<sup>nd</sup> Edition.
7. *Clinical orthopaedic rehabilitation* By S. Brent. Brozman & Kevin. E. Wilk, 2<sup>nd</sup> edition, Mosby publishers.
8. *Management of Common Musculoskeletal Disorder* by: Hertling, D, and Kessler RM *Physical Therapy Principles and Methods*. 3<sup>rd</sup> ed. Philadelphia. PA: WB Saunders.
9. *Orthopedic Physical Assessment*. Magee, D. 4<sup>th</sup> ed. Philadelphia PA: WB Saunders 1995.
10. *Physical Rehabilitations Assessments and Treatment*". By Susan B, O'Sullivan & Thomas J. Schmitz, 4<sup>th</sup> edition.
11. *Tidy's Physiotherapy* by Thomas A Skinner & Piercy.

### EVIDENCE BASED PRACTICE CREDIT HOURS 3 (2-1)

#### COURSE DESCRIPTION

This course introduces the concept of evidence-based practice in physical therapy including the formulation of answerable clinical questions, methods of obtaining peer-reviewed evidence to those clinical questions, and how to critically appraise evidence

once located. Current journal articles, texts, and online resources will be used in the course to develop critical reading and writing skills.

## **LEARNING OBJECTIVES**

- Discuss in detail the concept of evidence based practice in physical therapy.
- Demonstrate the latest skills needed for obtaining, evaluating, critiquing and applying the scientific literature pertaining to physical therapy practice.

## **COURSE CONTENTS**

### **EVIDENCE-BASED PHYSIOTHERAPY**

- An introduction about evidence-based Physiotherapy:
- High quality clinical research
- Patient preferences
- practice knowledge
- Additional factors
- Introduction to clinical decision making and process
- Importance of evidence-based Physiotherapy for patients, physiotherapists, profession and funders of physiotherapy services
- History of Evidence-Based Health Care
- Steps for practicing evidence-based Physiotherapy.
- Search Strategies
- The World Wide Web
- Selecting search terms AND OR
- Finding Evidence of Effects of Interventions
- PEDro
- The Cochrane Library
- Finding Evidence of Prognosis and Diagnostic Tests
- Finding Evidence of Experiences
- CINAHL
- Pub Med
- Getting full text
- Finding evidence of advances in clinical
- Practice (Browsing).

### **INFORMATIONAL NEEDS**

- Relevant clinical questions
- Refining your question
- Effects of intervention
- Experiences
- Prognosis
- Diagnosis.

### **CONSTITUTION OF EVIDENCE**

- Evidence about effects of interventions
- Different forms of evidence
- Different sources of evidence
- Hierarchy of evidence
- Research study design.

### **FINDING THE EVIDENCE**

### **TRUST UPON EVIDENCE**

- A process for critical appraisal of evidence
- Critical appraisal of evidence about the Effects of intervention
- Randomized trials
- Systematic reviews of randomized trials
- Critical appraisal of evidence about experiences
- Critical appraisal of evidence about prognosis
- Individual studies of prognosis
- Systematic reviews of prognosis
- Critical Appraisal of Evidence about Diagnostic Tests
- Individual studies of diagnostic tests

- Systematic reviews of diagnostic tests.

### **CLINICAL GUIDELINES AS A RESOURCE FOR EVIDENCE-BASED PHYSIOTHERAPY**

- What are clinical guidelines?
- History of clinical guidelines and why they are important
- Where can I find clinical guidelines?
- How do I know if I can trust the recommendations in a clinical Guideline?
- Scope and purpose
- Stakeholder involvement
- Rigor of development
- Clarity and presentation
- Applicability
- Editorial independence
- What do the results of the critical appraisal mean for my practice?
- Legal Implications of Clinical Guidelines
- Clinical guidelines or ‘reasonable care’: which do the courts consider more important?
- Documenting the use of a clinical guideline in practice: legal implications
- Reflections on the Future of Guideline Development
- Who should develop clinical guidelines?
- Collaboration in guideline development
- Unprofessional or multiprofessional guideline development?

### **CRITICAL THINKING**

- The Benefit of Asking the Right Questions

- What Are the Issue and the Conclusion?
- What Are the Reasons?
- What Words or Phrases Are Ambiguous?
- What Are the Value Conflicts and Assumptions?
- What Are the Descriptive Assumptions?
- Are There Any Fallacies in the Reasoning?
- How Good Is the Evidence: Intuition, Personal Experience?
- Testimonials, and Appeals to Authority?
- How Good Is the Evidence: Personal Observation, Research?
- Studies, Case Examples, and Analogies
- Are There Rival Causes?
- Are the Statistics Deceptive?
- What Significant Information Is Omitted?
- What Reasonable Conclusions Are Possible?
- Practice and Review
- The Tone of Your Critical Thinking
- Strategies for Effective Critical Thinking.

### **LAB WORK**

- Identify the different sources of evidence
- Critically appraised topics (CAT)
- How to evaluate web page
- Ways of searching strategies for different databases
- Selection of search terminology
- Retrieving of articles from data bases

### **RECOMMENDED BOOKS:**

1. *Practical Evidence based physiotherapy* By, Rob Herbert, GroJamtdvedt, Judy Mead & KareBirger Hagen.

2. *Asking the right question-A guide to critical thinking, 8<sup>th</sup> Edition By, M. Neil. Browne & Stuart M Keeley.*
3. *Additional reading material as assigned.*

## **SUPERVISED CLINICAL PRACTICE – IIICREDITS 3 (0-3)**

### **MUSCULOSKELETAL**

| <b>SEMESTER</b> | <b>SUPERVISOR</b>        | <b>FOCUS</b>                | <b>WARDS</b> | <b>COMPETENCIES</b> |
|-----------------|--------------------------|-----------------------------|--------------|---------------------|
| 7               | Supervised by Trained PT | Musculoskeletal Examination | All wards    | As listed below     |

### **COURSE DESCRIPTION**

- During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to musculoskeletal disorders. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric).
- Students learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

### **CLINICAL COMPETENCIES**

- **EXAMINATION**
- Based on best available evidence select examination tests and measures that are appropriate for the patient/client.
- Perform posture tests and measures of postural alignment and positioning.\*
- Perform gait, locomotion and balance tests including quantitative and qualitative measures such as:
- Balance during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Balance (dynamic and static) with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Gait and locomotion during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Bed mobility
- Transfers (level surfaces and floor)
- Wheelchair management
- Uneven surfaces
- Safety during gait, locomotion, and balance

- Perform gait assessment including step length, speed, characteristics of gait, and abnormal gait patterns.
- Characterize or quantify body mechanics during self-care, home management, work, community, tasks, or leisure activities.
- Characterize or quantify ergonomic performance during work (job/school/play)\*:
- Dexterity and coordination during work
- Safety in work environment
- Specific work conditions or activities
- Tools, devices, equipment, and workstations related to work actions, tasks, or activities
- Characterize or quantify environmental home and work (job/school/play) barriers:
- Current and potential barriers
- Physical space and environment
- Community access
- Observe self-care and home management (including ADL and IADL)
- Measure and characterize pain\* to include:
- Pain, soreness, and nociception
- Specific body parts
- Recognize and characterize signs and symptoms of inflammation.

**PERFORM MUSCULOSKELETAL SYSTEM TESTS AND MEASURES INCLUDING:**

- Accessory movement tests
- Anthropometrics
- Limb length
- Limb girth
- Body composition
- Functional strength testing
- Joint integrity
- Joint mobility
- Ligament laxity tests
- Muscle length
- Muscle strength including manual muscle testing, dynamometry, one repetition max
- Palpation
- Range of motion including goniometric measurements.

**PERFORM ORTHOTIC TESTS AND MEASURES INCLUDING**

- Components, alignment, fit, and ability to care for orthotic, protective, and supportive devices and equipment.
- Evaluate the need for orthotic, protective, and supportive devices used during functional activities.
- Remediation of impairments in body function and structure, activity limitations, and participation restrictions with use of orthotic, protective, and supportive device.
- Residual limb or adjacent segment, including edema, range of motion, skin integrity and strength.
- Safety during use of orthotic, protective, and supportive device.
- Perform prosthetic tests and measures including\*:
- Alignment, fit, and ability to care for prosthetic device.
- Prosthetic device use during functional activities.
- Remediation of impairments in body function and structure, activity limitations, and participation restrictions, with use of prosthetic device.
- Evaluation of residual limb or adjacent segment, including edema, range of motion, skin integrity, and strength.
- Safety during use of the prosthetic device.

- Perform tests and measures for assistive and adaptive devices including\*:
- Assistive or adaptive devices and equipment use during functional activities.
- Components, alignment, fit, and ability to care for the assistive or adaptive devices and equipment.
- Remediation of impairments in body function and structure, activity limitations, and participation restrictions with use of assistive or adaptive devices and equipment.
- Safety during use of assistive or adaptive equipment.

### **EVALUATION**

- Clinical reasoning
- Clinical decision making
- Synthesize available data on a patient/client expressed in terms of the International Classification of Function, Disability and Health (ICF) model to include body functions and structures, activities, and participation.
- Use available evidence in interpreting the examination findings.
- Verbalize possible alternatives when interpreting the examination findings.
- Cite the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.

### **DIAGNOSIS**

- Integrate the examination findings to classify the patient/client problem in terms of body functions and structures, and activities and participation (practice patterns in the Guide)
- Identify and prioritize impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

### **PROGNOSIS**

- Determine the predicted level of optimal functioning and the amount of time required to achieve that level.
- Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame including:
  - Age
  - Medication(s)
  - Socioeconomic status
  - Co-morbidities
  - Cognitive status
  - Nutrition
  - Social Support
  - Environment

### **PLAN OF CARE**

- Goal setting
- Coordination of Care
- Progression of care
- Discharge
- Design a Plan of Care
- Write measurable functional goals (short-term and long-term) that are time referenced with expected outcomes.

- Consult patient/client and/or caregivers to develop a mutually agreed to plan of care.
- Identify patient/client goals and expectations.
- Identify indications for consultation with other professionals.
- Make referral to resources needed by the patient/client (assumes knowledge of referral sources).
- Select and prioritize the essential interventions that are safe and meet the specified functional goals and outcomes in the plan of care
- Identify precautions and contraindications
- provide evidence for patient-centered interventions that are identified and selected
- define the specificity of the intervention (time, intensity, duration, and frequency)
- Set realistic priorities that consider relative time duration in conjunction with family, caregivers, and other health care professionals.
- Establish criteria for discharge based on patient goals and current functioning and disability.
- Coordination of Care
- Identify who needs to collaborate in the plan of care.
- Identify additional patient/client needs that are beyond the scope of physical therapist practice, level of experience and expertise, and warrant referral.
- Refer and discuss coordination of care with other health care professionals.
- Articulate a specific rationale for a referral.
- Advocate for patient/client access to services.
- Progression of Care
- Identify outcome measures of progress relative to when to progress the patient further.
- Measure patient/client response to intervention.
- Monitor patient/client response to intervention.
- Modify elements of the plan of care and goals in response to changing patient/client status, as needed.
- Make on-going adjustments to interventions according to outcomes including environmental factors and personal factors and, medical therapeutic interventions.
- Make accurate decisions regarding intensity and frequency when adjusting interventions in the plan of care.
- Discharge Plan
- Re-examine patient/client if not meeting established criteria for discharge based on the plan of care.
- Differentiate between discharge of the patient/client, discontinuation of service, and transfer of care with reevaluation.
- Prepare needed resources for patient/client to ensure timely discharge, including follow-up care.
- Include patient/client and family/caregiver as a partner in discharge.
- Discontinue care when services are no longer indicated.
- When services are still needed, seek resources and/or consult with others to identify alternative resources that may be available.
- Determine the need for equipment and initiate requests to obtain.



## **INTERVENTIONS**

- Safety, Emergency Care, CPR and First Aid
- Standard Precautions
- Body Mechanics and Positioning
- Categories of Interventions
- Safety, Cardiopulmonary Resuscitation Emergency Care, First Aid
- Ensure patient safety and safe application of patient/client care.
- Perform first aid.
- Perform emergency procedures.
- Perform Cardiopulmonary Resuscitation (CPR).
- Precautions
- Demonstrate appropriate sequencing of events related to universal precautions.
- Use Universal Precautions.
- Determine equipment to be used and assemble all sterile and non-sterile materials.
- Use transmission-based precautions.
- Demonstrate aseptic techniques.
- Apply sterile procedures.
- Properly discard soiled items.

## **BODY MECHANICS AND POSITIONING**

- Apply proper body mechanics (utilize, teach, reinforce, and observe).
- Properly position, drape, and stabilize a patient/client when providing physical therapy.

## **INTERVENTIONS**

- Coordination, communication, and documentation may include:
- Addressing required functions:
- Establish and maintain an ongoing collaborative process of decision-making with patients/clients, families, or caregivers prior to initiating care and throughout the provision of services.
- Discern the need to perform mandatory communication and reporting (eg, incident reports, patient advocacy and abuse reporting).
- Follow advance directives.
- Admission and discharge planning.
- Case management.
- Collaboration and coordination with agencies, including:
  - Home care agencies
  - Equipment suppliers
  - Schools
  - Transportation agencies
- Payer groups
- Communication across settings, including:
  - Case conferences
  - Documentation
  - Education plans
  - Cost-effective resource utilization.
  - Data collection, analysis, and reporting of:
    - Outcome data
    - Peer review findings
    - Record reviews
  - Documentation across settings, following APTA's Guidelines for Physical Therapy Documentation, including:
    - Elements of examination, evaluation, diagnosis, prognosis, and Intervention
    - Changes in body structure and function, activities and participation.
    - Changes in interventions
    - Outcomes of intervention

- Interdisciplinary teamwork:
- Patient/client family meetings
- Patient care rounds
- Case conferences
- Referrals to other professionals or resources.
- Patient/client-related instruction may include:
- Instruction, education, and training of patients/clients and caregivers regarding:
- Current condition, health condition, impairments in body structure and function, and activity limitations, and participation restrictions)
- Enhancement of performance
- Plan of care:
- Risk factors for health condition, impairments in body structure and function, and activity limitations, and participation restrictions.
- Preferred interventions, alternative interventions, and alternative modes of delivery
- Expected outcomes
- Health, wellness, and fitness programs (management of risk factors)
- Transitions across settings.

### **THERAPEUTIC EXERCISE MAY INCLUDE PERFORMING**

- Body mechanics and postural stabilization:
- Body mechanics training
- Postural control training
- Postural stabilization activities
- Posture awareness training
- Flexibility exercises:
- Muscle lengthening
- Range of motion
- Stretching
- Gait and locomotion training:
- Developmental activities training
- Gait training
- Device training
- Perceptual training
- Basic wheelchair training
- Strength, power, and endurance training for head, neck, limb, and trunk
- Active assistive, active, and resistive exercises (including concentric, dynamic/isotonic, eccentric, isokinetic, isometric, and plyometric exercises)
- Aquatic programs
- Task-specific performance training
- Strength, power, and endurance training for pelvic floor:
- Active (Kegel)
- Strength, power, and endurance training for ventilatory muscles
- Active and resistive
- Manual therapy techniques may include:
- Passive range of motion
- Massage:
- Connective tissue massage
- Therapeutic massage
- Manual traction
- Mobilization/manipulation:
- Soft tissue (thrust and non-thrust)
- Spinal and peripheral joints (thrust and non-thrust)
- Functional training in self-care and home management may include:
- Functional training in work (job/school/play), community, and leisure integration or reintegration may include:
- Activities of daily living (ADL) training:
- Bed mobility and transfer training
- Age appropriate functional skills
- Barrier accommodations or modifications
- Device and equipment use and training:

- Assistive and adaptive device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)
- Orthotic, protective, or supportive device or equipment training during self-care and home management
- Prosthetic device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)\*
- Functional training programs
- Simulated environments and tasks
- Task adaptation
- Injury prevention or reduction:
- Safety awareness training during self-care and home management\*
- Injury prevention education during self-care and home management
- Injury prevention or reduction with use of devices and equipment
- Prescription, application, and, as appropriate, fabrication of devices and equipment may include:
  - Adaptive devices
  - Hospital beds
  - Raised toilet seats
  - Seating systems – prefabricated
  - Assistive devices
  - Canes
  - Crutches
  - Long-handled reachers
  - Static and dynamic splints – prefabricated
  - Walkers
  - Wheelchairs
  - Orthotic devices:
  - Prefabricated braces
  - Prefabricated shoe inserts
  - Prefabricated splints
  - Prosthetic devices (lower-extremity)
  - Protective devices:
    - Braces
    - Cushions
    - Helmets
    - Protective taping
  - Supportive devices:
    - Prefabricated compression garments
    - Corsets
    - Elastic wraps
    - Neck collars
    - Slings
  - Supplemental oxygen - apply and adjust
  - Supportive taping
  - Electrotherapeutic modalities may include:
    - Biofeedback
    - Electrotherapeutic delivery of medications (eg, iontophoresis)
    - Electrical stimulation:
      - Electrical muscle stimulation (EMS)
      - Functional electrical stimulation (FES)
      - High voltage pulsed current (HVPC)
      - Neuromuscular electrical stimulation (NMES)
      - Transcutaneous electrical nerve stimulation (TENS)
    - Physical agents and mechanical modalities may include: *Physical agents:*
      - Cryotherapy:
        - Cold packs
        - Ice massage
        - Vapocoolant spray
      - Hydrotherapy:
        - Contrast bath
        - Pools
        - Whirlpool tanks
      - Sound agents:
        - Phonophoresis
        - Ultrasound
      - Thermotherapy
        - Dry heat
        - Hot packs
        - Paraffin baths
    - Mechanical modalities: Compression therapies (prefabricated)

- Compression garments: Skill Category Description of Minimum Skills
- Vasopneumatic compression devices
- Taping
- Compression bandaging (excluding lymphedema)
- Gravity-assisted compression devices:
- Standing frame
- Tilt table
- Mechanical motion devices:
- Continuous passive motion (CPM)
- Traction devices
- Intermittent
- Positional
- Sustained
- Documentation of all listed competencies in SOAP notes format

### **Note**

It is mandatory for each student to document minimum 16 cases per semester (1 cases per week) in clinical log book duly checked and signed by clinical supervisor on weekly basis and head of institute at completion

## **EIGHTH SEMESTER**

1. **MEDICINE - II**
2. **SURGERY - II**
3. **NEUROLOGICAL PHYSICAL THERAPY**
4. **RESEARCH METHODOLOGY & SCIENTIFIC INQUIRY**
5. **EMERGENCY PROCEDURE & PRIMARY CARE IN PHYSICAL THERAPY**
6. **SUPERVISED CLINICAL PRACTICE - IV**

### **MEDICINE-II CREDIT HOURS 3 (3-0)**

#### **COURSE DESCRIPTION**

This course intends to familiarize students with medical terminology and abbreviations for efficient and effective chart reviewing and documentation. It also explores systemic diseases, focusing on epidemiology, pathology, histology, etiology, as well as primary and secondary clinical characteristics and their management. Discusses and integrates subsequent medical and surgical management to formulate appropriate intervention indications, precautions and contraindications.

#### **LEARNING OBJECTIVES**

- Discuss history and physical examination related to dermatology, diseases of the brain and the spinal cord, renal diseases, blood and other miscellaneous conditions mentioned in the course contents.
- Identify social and psychological components of patients' medical problems.
- Discuss disease process, indications and limitations of clinical sources such as laboratory and roentgen graphic studies, consults, family input and old records to request and interpret data pertinent to problem solving.

#### **COURSE CONTENTS**

##### **DERMATOLOGY**

- Acne vulgaris

- Psoriasis
- Boils
- Carbuncles
- Alopecia
- Mycosis fungoides
- Polymorphic light eruptions
- Vitiligo
- Pityriasis
- Hyperhidrosis

### **DISEASES OF BRAIN AND SPINAL CORD**

- Identify the common neurological symptoms including brain death, Sleep, Unconsciousness and Coma.
- Carry out general neurological examination
- Stroke, types of stroke, Parkinson's disease, Epilepsy, Multiple Sclerosis, Infective and Inflammatory diseases, Hydrocephalus, Headache, Migraine, Facial pain, Head injury, Motor neuron disease, Diseases of spinal cord, Diseases of Cranial nerves,

### **RECOMMENDED BOOKS**

1. *Practice of medicine by: Davidson.*
2. *Clinical medicine by: Parveen j Kumar & Michael Clark.*
3. *Short text book by medicine by: M. Inam Danish.*
4. *Hutchison's clinical methods by: Michael swash. 21st edition*

Peripheral nerve lesions, Diseases of voluntary muscles and of neuromuscular junction

- Different types of Intracranial tumors

### **RENAL DISEASES**

- Describe Glomerulonephritis, Acute nephritic syndrome, Nephrotic syndrome, Urinary tract infection, Renal hypertension, Renal failure, Benign enlargement of prostate gland, Prostatic carcinoma.

### **DISEASES OF THE BLOOD**

- Describe Anaemia, Types of Anaemia, Bleeding and Coagulation, Haemophilia and Thrombosis

### **MISCELLANEOUS DISEASES**

- Describe Diabetes Mellitus and its complications, Diabetic Neuropathy, Diabetic foot and Steroid induced Myopathy.

## **SURGERY – II**

**CREDIT HOURS 3 (3-0)**

### **COURSE DESCRIPTION**

This course intends to familiarize students with principles of surgery along with familiarization with terminology and abbreviations for efficient and effective chart reviewing and documentation. It also explores various conditions needing surgical attention, focusing on epidemiology, pathology, as well as primary and secondary clinical characteristics and their surgical management

### **LEARNING OBJECTIVES**

- Demonstrate the pre- and post-operative care of patients.
- Describe presentations of major surgical problems, establish correlations among clinical observation,

surgical (operative) pathology, and the physiological alterations achieved through surgery.

- Differentiate the surgical health care delivery to both inpatients and outpatients in a variety of settings
- Describe the surgical management of disease.
- Recognize the entire treatment cycle of the surgical patient from diagnosis to operative management and through recovery.

## **COURSE CONTENTS**

### **GENERAL SURGERY**

- Describe the Indications for surgery, Types of incisions, Wounds, types of wounds, factors affecting wounds healing, care of wounds, Bandages and dressing, Trauma and metabolic response to trauma
- Explain chest and abdominal trauma, Hemorrhage, hemostasis and blood transfusion.
- Classification of shock, Fluid and electrolyte balance, Classification of body fluid changes, Pre, intra and post-operative fluid therapy.
- precautions for Surgery in diabetic patients
- Classify Burns, Types and degrees of Burns in pediatric and adults,
- Classify Grafts, Types of Grafts, Identify post- grafting precautions,
- Different types of tumors and their classifications.
- Discuss Preoperative assessment & preparation, Post -operative treatment, complications and their management.
- Describe the Types of anaesthesia, Local anaesthetic agents and Regional anaesthesia (spinal and epidural), Intravenous anaesthetic agents, Muscle relaxants, Inhalational anaesthetic agents, Anaesthesia and associated diseases, Complications of anaesthesia, Perioperative management, Recovery from anaesthesia.
- Review Pain management and postoperative care.
- Identify Ulcers, sinuses and fistulas
- Describe operation performed on: oesophagus, stomach, intestine gall bladder, bile duct, spleen, pancreas, liver, abdominal wall, hernias, breast, kidneys, ureters, prostate, peritoneum, mesentery and retroperitoneal space
- Describe the Indications of Transplantation, Post- Operative Complications and precautions of Transplantation of liver and kidney.

### **THORACIC SURGERY**

- **PULMONARY SURGERY**
- Explain the Indications of pulmonary surgery, types of incision, types of operation, complications of pulmonary surgery, drains, and tubes.
- Describe pneumonectomy, lobectomy, thoracoplasty and Operations on pleura.
- Recognize the types of Chest injuries, Causes, management procedures.
- Describe the Diseases of chest wall and pleura, Diseases of bronchi

- Identify different types of Lung tumors and their classifications, Lung abscess, Hydatid disease of lung, pulmonary embolism, Mediastinal masses, Problems related to diaphragm
- **CARDIAC SURGERY**
- Explain the Indications of Cardiac surgery, Special investigation procedures in cardiac surgery, Basic techniques in cardiac surgery, Types of incision, Types of operation, Complications of cardiac surgery, Lines, drains and tubes, Congenital heart disease Acquired heart diseases, Diseases of the pericardium
- Describe the Indications of Cardiac Transplantation, Post- Operative Complications and precautions of Transplantation.
- **VASCULAR SURGERY**
- Describe the Indications of Vascular surgery, Investigation in vascular disease types of operation, Complication of vascular surgery, arterial occlusion, Gangrene, amputation and its types, Aneurysm, Burgers disease, Raynaud's disease and syndrome, Varicose veins, Superficial and deep venous thrombosis, Venous hemorrhage, Lymph edema, Lymph adenitis and lymphomas.
- **NEUROSURGERY**
- their management.
- **CRANIAL SURGERY**
- Describe the Indications of Cranial surgery, Special investigation in brain diseases and traumas, Types of operations and complications of cranial surgery
- Explain Traumatic brain injuries, Acute intracranial hematomas and Fractures of the skull
- Describe the Intra cranial abscess, intracranial tumors, intracranial aneurysm and hydrocephalus.
- **SURGERY OF VERTEBRAL COLUMN, SPINAL CORD AND PERIPHERAL NERVES**
- Describe Dislocation and management of dislocation of vertebral column, Tumors of vertebral column
- Explain Prolapse intervertebral disc, Disc protrusion, Spondylosis and spondylolisthesis.
- Classify Spinal cord injuries and syndromes.
- Assess the level, complete and incomplete spinal cord injuries and rehabilitation potential.
- Describe the Surgical, medical Management and post- operative care of Spinal cord injuries.
- Describe Tumors of spinal cord types of operations performed on nerves, Nerve injuries and their surgical management,
- Describe the lesions of cranial and spinal nerves and

### RECOMMENDED BOOKS

1. *Short practice of surgery by Baily and Love's.*
2. *Text Book of Surgery by Ijaz Ahsan.*
3. *Outline of Fractures by davidhamblen, Hamish Simpsons.*
4. *Outline of orthopedics. By davidhamblen, Hamish Simpsons.*

## **NEUROLOGICAL PHYSICAL THERAPY CREDIT HOURS 3(2-1)**

### **COURSE DESCRIPTION**

This course provides an in-depth exploration of the assessment and intervention procedures used with persons with various neurological pathologies. The focus of this course will be on neurological problems acquired in adulthood. Theories of motor control and motor learning will be studied and applied to assessment and treatment. Laboratories will be used to strengthen evaluation and intervention skills, especially the analysis of movement as well as planning, practicing, and modifying treatment. Clinical competence in the evaluation and treatment of persons with neurological impairments is to be developed. It will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

### **LEARNING OBJECTIVES**

- Demonstrate assessment of patients with various neurological pathologies.
- Explain various intervention strategies & procedures to manage patients with various neurological pathologies.
- Describe motor control & motor learning theories and their applications with regard to contemporary management of the neurological problems.
- Describe motor control & neuro developmental approaches of interventions.
- Discuss and demonstrate to manage patients with various neurological pathologies.

### **COURSE CONTENTS**

#### **APPLIED ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM**

- Functional and applied anatomy of Brain, Spinal cord, CNS Support Structures, Neurons, Peripheral nervous system, autonomic Nervous System and Spinal Level Reflexes.

#### **NEUROLOGICAL EXAMINATION**

- Perform assessment of patients with various neurological pathologies.
- Conduct & document clinical examination (History, System review, Test and measures, used in standardized assessment procedure)
- Evaluate and Analyze clinical assessment procedures to construct a problem list, long term Goals, Short term goals, Treatment plan,

Progression and discharge planning..

#### **INTERVENTIONS**

- Different theories of Motor Control and Motor Learning, their limitations and clinical implications
- Neurodevelopmental (NDT) approaches and their clinical implications in the management of patients with neurological pathologies such as;
  - Roods approach
  - Bobath approach
  - Kabat, Knott, Voss (Proprioception neuro facilitation PNF Approach).
  - Burnstorm Approach.
- Contemporary approaches and their clinical implications in the



management of patients with neurological pathologies such as;

- Motor Control / Motor Learning Approach
  - Neural plasticity/ adoptability
  - Constraint induced movement therapy (CIMT)
  - Modified Constrained Induced Movement Therapy (mCIMT)
  - Task-Related Training Approach
  - Compensatory Training Approach
  - Normal Reach, Grasp and Manipulation.
- Construct treatment strategies to improve, strength, Balance, coordination, locomotion and gait, skill acquisition, postural control, mobility functions.
  - Role of sensory system in improving motor control and sensory rehabilitation.

### **NEUROLOGICAL DYSFUNCTIONS**

- Assess and manage Stroke, types of stroke, problems associated with stroke
- Assess and manage traumatic Brain Injury (TBI), Types and severity of Problems associated with TBI
- Assess and manage Spinal Cord Injury (SCI), Complete and

### **LAB WORK**

- In the laboratory sessions, neurological physiotherapy skills will be demonstrated and practiced. Various reflective case studies related to the neurological rehabilitation will be assigned to the students

### **RECOMMENDED BOOKS**

1. *Neurological Physiotherapy Bases of evidence for practice Treatment and management of patients described by specialist clinicians by Cecily Partridge*
2. *Neurological Physiotherapy A problem-solving approach By Susan Edwards, second edition.*
3. *Neurologic examination By Robert j. Schwartzman , first edition*

incomplete SCI, clinical Syndromes and problems associated with SCI.

- Assess and manage brain and spinal cord disorders such as;
- Multiple Sclerosis (MS)
- Cerebellar Disorders
- Parkinson's Disease (PD)
- Motor Neuron Disease (MND)
- Poly Neuropathies.
- Post polio Syndrome (PPS)
- Vestibular Disorders
- Cranial Nerves Disorders
- Myasthenia gravis
- Spinal muscular atrophy

### **PERIPHERAL NERVE DISORDERS AND MANAGEMENT**

- Peripheral nerve structure; nerve structure, nervous system mobility characteristics
- Common sites of injury to peripheral nerves, impaired nerve function and recovery process
- Neural tension disorders and their managements
- Neuromuscular disorders involving impaired nerve function such as:
  - Thoracic outlet syndrome
  - Carpal tunnel syndrome
  - Compression in tunnel of Guyon
  - Complex regional pain syndrome:
  - Reflex sympathetic Dystrophy and causalgia.

## **RESEARCH METHODOLOGY & SCIENTIFIC INQUIRY CREDIT HOURS 3(2-1)**

### **COURSE DESCRIPTION**

This course includes discussion on basic quantitative methods and designs, including concepts of reliability and validity, interpretation of inferential statistics related to research designs, correlational statistics & designs, interclass correlation coefficients, and critical appraisal of the literature.

### **LEARNING OBJECTIVE**

- Identify the basic concepts of research and scientific inquiry and its methodologies
- Identify appropriate research topics
- Define appropriate research problem and parameters
- Construct a project proposal to undertake a research project.
- Discuss scientific inquiry, its principle and application in medical research.
- Describe search techniques for literature review
- Differentiate between different levels of evidence, appraisal and different studies with respect to their effectiveness in literature.

### **COURSE CONTENTS**

#### **RESEARCH FUNDAMENTALS**

- Research in physical therapy and rehabilitation
- Role, importance, principles and application of Ethics in Rehabilitation research.
- Basic vs applied research.
- Research Problems / Questions, and Hypotheses, Research Paradigms, Research Validity and reliability

quantitative and epidemiological research designs.

- Discuss different research methodologies used in experimental, and non-experimental, qualitative and quantitative and epidemiological research designs

#### **SAMPLING**

- Discuss Selection of sample: sample & population, basic considerations in sampling, determination of sample size, elimination of sampling bias and types of sampling such as: Random sampling, stratified random sampling, cluster sampling and systematic sampling.

#### **RESEARCH PROJECT**

- Discuss various components of research synopsis and Thesis
- Develop a Research Plan while taking into account, the ethical, legal and professional obligations

#### **INSTRUMENTATION AND DATA COLLECTION**

- Discuss, objectivity and standardization, types of tests and scales, validity and reliability of an instrument, assessment of validity and reliability, development of tests/scale

#### **RESEARCH DESIGN**

- Describe different research designs
- Differentiate between experimental & non-experimental, qualitative and

#### **DATA ANALYSIS & INTERPRETATION**

- Analyze data

- Describe types of measurement scales, descriptive statistics and inferential statistic.
- Perform data entry and Analysis using statistical package for Social Sciences (SPSS)

### **PREPARATION OF A RESEARCH REPORT**

- Use Formatting & styling, citation, references & bibliography
- Differentiate theses writing, dissertations & journal articles writing.

### **SCIENTIFIC INQUIRY**

- Describe scientific inquiry, Evidence based approach to scientific inquiry, Principles of scientific inquiry, the application of scientific inquiry to

### **LAB WORK**

- Literature review
- Selection of research topic & submission of research proposal

- physical therapy.
- Access digital libraries and different research databases, Effective searching and reviewing literature material.
- Interpret Critical appraisal of published research in the areas of:
  - Examination and Evaluation
  - Diagnosis
  - Prognosis
  - Intervention
  - Harm
- Interpret Critical evaluation of Randomized Control Trial (RCT), Systemic review, Diagnosis and screening tests, Case reports
- Discuss how to conduct clinical research and hierarchy of evidences in clinical researches

### **RECOMMENDED BOOKS**

1. *Essentials of clinical research* By Stephan P. Glasser.
2. *Rehabilitation Research (Principles and Applications) 3<sup>rd</sup> Edition* By Elizabeth Domholdt.

## **EMERGENCY PROCEDURES & PRIMARY CARE IN PHYSICAL THERAPY CREDIT HOURS 2(2-0)**

### **COURSE DESCRIPTION**

This course provides the student with all of the skills necessary to take appropriate action in an emergency in any practice setting. Basic life support, first aid and emergency. The course is designed to provide knowledge and skills in emergency techniques and in the application of appropriate action necessary to take care of the patient/client.

### **LEARNING OBJECTIVE**

- Provide knowledge and skill in emergency techniques
- Application of appropriate action necessary to take care of the patient/client
- Describe Basic life support
- Describe first aid and emergency preparedness

## **COURSE CONTENTS**

### **ORGANIZATION AND ADMINISTRATION OF EMERGENCY CARE**

- Developing and implementing emergency action plan, Emergency team.
- Initial patient assessment and care, Emergency equipment, Venue location, Emergency transportation, Emergency care facilities, Legal need and documentation.

### **PHYSICAL EXAMINATION OF THE CRITICALLY INJURED PATIENT/ATHLETE**

- Conduct Scene assessment, Vital signs and safety
- Description of Body substance, isolation precautions
- Differentiate between Primary survey and Secondary survey

### **AIRWAY MANAGEMENT**

- Air way anatomy, Air way compromise, Oxygen therapy and advanced airway devices.

### **SUDDEN CARDIAC DEATH**

- Outline of Incidence, etiology of sudden death in general population, Sudden, cardiac arrest in athletes and Management of sudden cardiac arrest
- Identify Screening and recognition of cardiac warning signs.
- Preparation for cardiac emergencies

### **HEAD INJURIES**

- Patho-mechanics of brain injuries
- Identify cerebral concussion, contusion, cerebral hematoma, Second impact syndrome.

- Performing Initial on site assessment, Sideline assessment, Special tests for assessment of coordination and cognition

### **EMERGENCY CARE OF CERVICAL SPINE INJURIES**

- Mechanism of injuries to the spinal cord, Assessment and management.

### **EMERGENT GENERAL MEDICAL CONDITIONS**

- Identify Sudden death, Exercise induced anaphylaxis, acute asthma, Diabetes mellitus, Mononucleosis, Sickle cell traits and Hypertension.

### **ENVIRONMENT-RELATED CONDITIONS**

- Heat related emergencies, their prevention, Cold related injuries, Lightning and Altitude related emergencies.

### **ORTHOPEDIC INJURIES**

- Describe Basic emergency medical care, Fundamentals of skeletal fractures and
- Perform Splinting techniques for;
- Fractures and dislocations of upper extremity
- Fractures and dislocations of lower extremity
- Fractures and dislocations of spine.

### **ABDOMINAL INJURIES**

- Describe Initial evaluation of abdominal injuries
- Identify abdominal wall contusions, splenic injuries, liver injuries, renal injuries, intestinal injuries, pancreatic injuries, Non-traumatic abdominal

injuries: Appendicitis, ectopic pregnancy.

### **THORACIC INJURIES**

- Describe initial Assessment and Management of different Types of injuries: fractures, Pneumothorax, hemothorax, pulmonary embolism.

### **THE PSYCHOLOGICAL AND EMOTIONAL IMPACT OF EMERGENCY SITUATIONS**

- Defining psychological trauma
- Describe Psychological trauma in athletic environment and Pharmacologic considerations for the physical therapist
- Define The psychological emergency response in both external and internal team members
- Describe the science behind the art the patient's interview.

### **EXAMINATION/EVALUATION**

- Prologue
- Symptoms investigation, Part I: Chief complaint by body region
- Symptoms investigation, Part II: Chief complaint by symptom
- Patient health history including identifying health risk factor
- Review of systems
- Patient interview: the physical examination begins
- Review of cardiovascular and pulmonary systems and vital signs
- Upper quadrant screening examination
- Lower quadrant screening examination\ Diagnostic imaging
- Laboratory tests and values.

### **DISORDERS AND MANAGEMENT**

- Acute Care Physical Therapy Examination and Discharge Planning.
- Clinical Laboratory Values and Diagnostic Testing.
- Physiologic Monitors and Patient Support Equipment.
- Bed Rest, Deconditioning, and Hospital-Acquired Neuromuscular Disorders.
- The Immune System and Infectious Diseases and Disorders.
- Cardiovascular Diseases and Disorders.
- Pulmonary Diseases and Disorders.
- Musculoskeletal/Orthopedic Diseases and Disorders
- Neurologic and Neurosurgical Diseases and Disorders.
- Endocrine Diseases and Disorders.
- Gastrointestinal Diseases and Disorders.
- Genitourinary Diseases and Disorders.
- Oncological Diseases and Disorders.
- Transplantation.
- Integumentary Diseases and Disorders
- Wound Management.

### **SPECIAL POPULATIONS**

- The Pediatric and adolescent population
- The obstetric client
- The geriatric population
- Health and wellness perspective in primary care.
- Basic Life Supports & Supervised Intra Muscular/Intra venous Injection Therapy

### **DISASTER MANAGEMENT**

- Floods
- Earth quakes
- Blasts

- Fire
- War
- Foods and communication in disasters

**RECOMMENDED BOOKS**

1. *Emergency Care in Athletic Training* by: Keith M. Gorse, Robert O. Blanc, Francis Feld, Matthew Radelet, 1<sup>st</sup> edition, 2010, F.A Davis Company.
2. *Acute care hand book for Physical Therapists* by: Jaime C paz, Michelle P West, 2<sup>nd</sup> edition, 2002, Butterworth Heinemann.

**SUPERVISED CLINICAL PRACTICE – IV CREDIT HOURS 3(0-3)  
NEUROLOGICAL**

| SEMESTER | SUPERVISION              | FOCUS                        | WARDS                            | COMPETENCIES |
|----------|--------------------------|------------------------------|----------------------------------|--------------|
| 8        | Supervised by trained PT | Evaluation, Examination, and | Neurological (IPD/OPD; Surgical& | Listed below |

**COURSE DESCRIPTION**

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to neurological disorders. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric.) Students learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

**COMPETENCIES**

**EXAMINATION**

- Analyze data based on best available evidence select examination tests and measures that are appropriate for the patient/client.
- Perform posture tests and measures of postural alignment and positioning.
- Perform gait, locomotion and balance tests including quantitative and qualitative measures such as:
- Balance during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Balance (dynamic and static) with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Gait and locomotion during functional activities with or without the
  - use of assistive, adaptive, orthotic, protective, supportive, or
  - prosthetic devices or equipment to include:
- Bed mobility
- Transfers (level surfaces and floor)
- Wheelchair management

- Uneven surfaces
- Safety during gait, locomotion, and balance
- Perform gait assessment including step length, speed, characteristics of gait, and abnormal gait patterns.
- Recognize and characterize signs and symptoms of inflammation.
- Perform neurological tests and measures including:
  - Arousal, attention and cognition tests and measures.
  - Cranial and peripheral nerve integrity tests and measures.
  - Motor distribution of the cranial nerves (eg, muscle tests, observations)
  - Motor distribution of the peripheral nerves (eg, dynamometry, muscle tests observations, thoracic outlet tests)
  - Response to neural provocation (e.g. tension test, vertebral artery compression tests)
  - Response to stimuli, including auditory, gustatory, olfactory, pharyngeal, vestibular, and visual (eg, observations, provocation tests)
- Neuromotor development and sensory integration tests
- Acquisition and evolution of motor skills, including age-appropriate development
  - Sensorimotor integration, including postural responses, equilibrium, and righting reactions
- Tests and measures for reflex integrity including:
  - Deep reflexes (eg, myotatic reflex scale, observations, reflex tests)
  - Postural reflexes and reactions, including righting, equilibrium and protective reactions
  - Primitive reflexes and reactions, including developmental
  - Resistance to passive stretch
  - Superficial reflexes and reactions
  - Resistance to velocity dependent movement
- Sensory integrity tests and measures that characterize or quantify including:
  - Light touch
  - Sharp/dull
  - Temperature
  - Deep pressure
  - Localization
  - Vibration
  - Deep sensation
  - Stereognosis
  - Graphesthesia.

## **EVALUATION**

- Synthesize available data on a patient/client expressed in terms of the International
- Classification of Function, Disability and Health (ICF) model to include body functions and structures, activities, and participation.
- Use available evidence in interpreting the examination findings.
- Verbalize possible alternatives when interpreting the examination findings.
- Cite the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.

## **DIAGNOSIS**

- Integrate the examination findings to classify the patient/client problem in terms of body functions and structures, and activities and participation (ie, practice patterns in the Guide)
- Identify and prioritize impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

### **PROGNOSIS**

- Determine the predicted level of optimal functioning and the amount of time required to achieve that level.
- Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame including
  - Age
  - Medication(s)
  - Socioeconomic status
  - Co-morbidities
  - Cognitive status
  - Nutrition
  - Social Support
  - Environment

### **PLAN OF CARE**

- Perform Goal setting, Coordination of Care, Progression of care, Discharge
- Design a Plan of Care
- Write measurable functional goals (short-term and long-term) that are time referenced with expected outcomes.
- Consult patient/client and/or caregivers to develop a mutually agreed to plan of care.
- Identify patient/client goals and expectations.
- Identify indications for consultation with other professionals.
- Make referral to resources needed by the patient/client (assumes knowledge of referral sources).
- Select and prioritize the essential interventions that are safe and meet the specified functional goals and outcomes in the plan of care
- identify precautions and contraindications,
- provide evidence for patient-centered interventions that are identified and selected,
- define the specificity of the intervention (time, intensity, duration, and frequency),
- Set realistic priorities that consider relative time duration in conjunction with family, caregivers, and other health care professionals).
- Establish criteria for discharge based on patient goals and current functioning and disability.

### **COORDINATION OF CARE**

- Identify who needs to collaborate in the plan of care.



- Identify additional patient/client needs that are beyond the scope of physical therapist practice, level of experience and expertise, and warrant referral
- Refer and discuss coordination of care with other health care professionals
- Articulate a specific rationale for a referral.
- Advocate for patient/client access to services.

### **PROGRESSION OF CARE**

- Identify outcome measures of progress relative to when to progress the patient further.
- Measure patient/client response to intervention.
- Monitor patient/client response to intervention.
- Modify elements of the plan of care and goals in response to changing patient/client status, as needed.
- Make on-going adjustments to interventions according to outcomes including environmental factors and personal factors and, medical therapeutic interventions.
- Make accurate decisions regarding intensity and frequency when adjusting interventions in the plan of care.

### **DISCHARGE PLAN**

- Re-examine patient/client if not meeting established criteria for discharge based on the plan of care.
- Differentiate between discharge of the patient/client, discontinuation of service, and transfer of care with re-evaluation.\*
- Prepare needed resources for patient/client to ensure timely discharge, including follow-up care.
- Include patient/client and family/caregiver as a partner in discharge.\*
- Discontinue care when services are no longer indicated.
- When services are still needed, seek resources and/or consult with others to identify alternative resources that may be available.
- Determine the need for equipment and initiate requests to obtain.

### **INTERVENTIONS**

- Perform Safety, Emergency Care, CPR and First Aid, Standard Precautions, Body Mechanics and Positioning
- Demonstrate appropriate sequencing of events related to universal precautions.
  - Determine equipment to be used and assemble all sterile and non-sterile materials.
  - Use transmission-based precautions.
  - Demonstrate aseptic techniques.
  - Apply sterile procedures.
  - Properly discard soiled items.

### **APPLY BODY MECHANICS AND POSITIONING**

- Apply proper body mechanics (utilize, teach, reinforce, and observe) properly position, drape, and stabilize a patient/client when providing physical therapy.

## **INTERVENTIONS**

- Coordination, communication, and documentation may include:
- Addressing required functions:
- Establish and maintain an ongoing collaborative process of decision-making with patients/clients, families, or caregivers prior to initiating care and throughout the provision of services.
- Discern the need to perform mandatory communication and reporting (eg, incident reports, patient advocacy and abuse reporting).
- Follow advance directives.

## **ADMISSION AND DISCHARGE PLANNING**

- Case management.
- Collaboration and coordination with agencies, including:
  - Home care agencies
  - Equipment suppliers
  - Schools
  - Transportation agencies
  - Payer groups

## **COMMUNICATION ACROSS SETTINGS, INCLUDING**

- Case conferences
- Documentation
- Education plans
- Cost-effective resource utilization.
- Data collection, analysis, and reporting of:
  - Outcome data
  - Peer review findings
  - Record reviews
- Documentation across settings, following APTA's Guidelines for Physical Therapy Documentation, including:
  - Elements of examination, evaluation, diagnosis, prognosis, and Intervention
  - Changes in body structure and function, activities and participation.
  - Changes in interventions
  - Outcomes of intervention
  - Interdisciplinary teamwork:
  - Patient/client family meetings
  - Patient care rounds
- Case conferences
- Referrals to other professionals or resources.
- Patient/client-related instruction may include:
  - Instruction, education, and training of patients/clients and caregivers regarding:
    - Current condition, health condition, impairments in body structure and function, and activity limitations, and participation restrictions)
    - Enhancement of performance
  - Plan of care:
  - Risk factors for health condition, impairments in body structure and function, and activity limitations, and participation restrictions.
- Preferred interventions, alternative interventions, and alternative modes of delivery
- Expected outcome

- Health, wellness, and fitness programs (management of risk factors)
- Transitions across settings

### **THERAPEUTIC EXERCISE MAY INCLUDE PERFORMING**

Balance coordination and agility training:

- Developmental activities training
- Motor function (motor control and motor learning) training
- Neuromuscular education or reeducation
- Perceptual training
- Posture awareness training
- Sensory training or retraining
- Standardized, programmatic approaches
- Task-specific performance training
- Neuromotor development training:
- Developmental activities training\*
- Motor training
- Movement pattern training
- Neuromuscular education or reeducation
- Functional training in self-care and home management may include
- Functional training in work (job/school/play), community, and leisure integration or reintegration may include
- Activities of daily living (ADL) training: Bed mobility and transfer training, Age appropriate functional skills
- Barrier accommodations or modifications
- Device and equipment use and training:
- Assistive and adaptive device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)\*
- Orthotic, protective, or supportive device or equipment training during self-care and home management\*
- Prosthetic device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)\*
- Functional training programs:
- Simulated environments and tasks\*
- Task adaptation
- Injury prevention or reduction:
- Safety awareness training during self-care and home management\*
- Injury prevention education during self-care and home management
- Injury prevention or reduction with use of devices and equipment
- Prescription, application, and, as appropriate, fabrication of devices and equipment may include:
- Adaptive devices:
- Hospital beds
- Raised toilet seats
- Seating systems – prefabricated
- Assistive devices:
- Canes
- Crutches
- Long-handled reachers
- Static and dynamic splints – prefabricated
- Walkers
- Wheelchairs
- Orthotic devices:
- Prefabricated braces
- Prefabricated shoe inserts
- Prefabricated splints
- Prosthetic devices (lower-extremity)
- Protective devices:
- Braces
- Cushions
- Helmets
- Protective taping
- Supportive devices
- Prefabricated compression garments
- Corsets

- Elastic wraps
- Neck collars
- Slings
- Supplemental oxygen - apply and adjust
- Supportive taping
- Electrotherapeutic modalities may include:
  - Biofeedback
  - Electrotherapeutic delivery of medications (eg, iontophoresis)
  - Electrical stimulation: Electrical muscle stimulation (EMS), Functional electrical stimulation (FES) High voltage pulsed current (HVPC) Neuromuscular electrical stimulation (NMES) Transcutaneous electrical nerve stimulation (TENS)
- Physical agents and mechanical modalities may include: *Physical agents*;
  - Cryotherapy
  - Cold packs
  - Ice massage
  - Vapocoolant spray
  - Hydrotherapy
  - Contrast bath
  - Pools
  - Whirlpool tanks
  - Sound agents
  - Phonophoresis
  - Ultrasound
- Thermotherapy
  - Dry heat
  - Hot packs
  - Paraffin baths
- Mechanical modalities:
  - Compression therapies (prefabricated)
  - Compression garments: Skill Category Description of Minimum Skills
  - Vasopneumatic compression devices\*
  - Taping
- Compression bandaging (excluding lymphedema)
- Gravity-assisted compression devices:
  - Standing frame
  - Tilt table
  - Mechanical motion devices
  - Continuous passive motion (CPM)
  - Tractio  
n  
device  
s
  - Intermittent
  - Positional
  - Sustained
- Documentation of all listed competencies in SOAP notes format.

### Note

It is mandatory for each student to document minimum 16 cases per semester (1 cases per week) in clinical log book duly checked and signed by clinical supervisor on weekly basis and head of institute at completion

a model to use when learning about pediatric pathologies, assessments and interventions. This course also involves

### NINTH SEMESTER

1. **CARDIOPULMONARY PHYSICAL THERAPY**
2. **PROSTHETICS & ORTHOTICS**
3. **CLINICAL DECISION MAKING & DIFFERENTIAL IAGNOSIS**
4. **MANUAL THERAPY**

5. **PROFESSIONAL PRACTICE (LAWS, ETHICS & ADMINISTRATION)**
6. **INTEGUMENTARY PHYSICAL THERAPY**
7. **SUPERVISED CLINICAL PRACTICE-V**

## **CARDIOPULMONARY PHYSICAL THERAPY CREDIT HOURS 3(2-1)**

### **COURSE DESCRIPTION**

This course includes applied anatomy, applied physiology and pathology of the cardiopulmonary system. This course discusses relevant tests and measures for determining impairment and differentiating the diagnosis based on the specificity and sensitivity of the assessment instruments as related to patients with cardiopulmonary systems disorders. The use of evidence-based physical therapy intervention for cardiopulmonary systems disorders is emphasized. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

### **COURSE OBJECTIVES**

- Demonstrate the basic knowledge of applied anatomy, physiology & pathology.
- Demonstrate, evaluate & perform examination in cardiopulmonary conditions
- Apply evidence based physical therapy intervention.

### **COURSE CONTENTS**

#### **MEDICAL TERMINOLOGY REGARDING CARDIOPULMONARY SYSTEM**

- Cardiovascular Diagnostic Tests and procedures
- Electro cardio-graphy
- Pulmonary Diagnostic Tests and Procedures.

#### **INTRODUCTION APPLIED ANATOMY AND PHYSIOLOGY**

- Anatomy of the Cardiovascular and Respiratory Systems
- Physiology of the Cardiovascular and Respiratory Systems.

#### **SURGICAL INTERVENTIONS, MONITORING AND SUPPORT**

- Cardiovascular and Thoracic interventions
- Thoracic Organ Transplantation; Heart, Lung, and heart-Lung
- Monitoring and Life-Support Equipment.

#### **PATHO-PHYSIOLOGY**

- Ischemic Cardiac Condition
- Cardiac Muscle Dysfunction
- Restrictive Lung Dysfunction
- Chronic Obstructive Pulmonary Diseases
- Cardiopulmonary Implications of Specific Diseases.

#### **CARDIOPULMONARY ASSESSMENT AND INTERVENTION**

- Assessment Procedures
- Treatment of Acute Cardiopulmonary Conditions
- Therapeutic Interventions in Cardiac Rehabilitation and Prevention
- Pulmonary Rehabilitation
- Outcome Measures.

#### **DIAGNOSTIC TESTS AND PROCEDURES**

## **THE NEEDS OF SPECIFIC PATIENTS**

### **INTENSIVE CARE FOR THE CRITICALLY ILL ADULT**

- Assessment of the critically ill patient in the intensive care unit (ICU)
- Mechanical ventilation - implications for physiotherapy
- Musculoskeletal problems
- Patient groups with specific needs
- Systemic inflammatory response syndrome (SIRS) and sepsis
- Acute respiratory distress syndrome (ARDS)
- Disseminated intravascular coagulation (DIC)
- Inhalation burns
- Trauma
- Neurological conditions requiring intensive care
- Physiotherapy techniques
- Emergency situations.

### **PULMONARY REHABILITATION**

- Definition and aims of pulmonary rehabilitation
- Benefits of pulmonary rehabilitation
- Setting up pulmonary rehabilitation
- Resources
- Selection of patients
- Patient assessment for pulmonary rehabilitation
- Structure of pulmonary rehabilitation
- Pulmonary rehabilitation team
- Exercise component
- Outcome measures.

### **CARDIAC REHABILITATION**

- Introduction
- Goals of cardiac rehabilitation
- Cardiac rehabilitation team
- Role of the physiotherapist
- Rationale for cardiac rehabilitation
- Early ambulation
- Exercise training

- Secondary prevention
- Education
- Manifestations of ischaemic heart disease
- Cardiac arrest
- Angina pectoris
- Myocardial infarction
- Cardiac surgery
- Drugs to control the cardiovascular system
- Physiotherapy
- Assessment
- Recording
- Treatment
- Outcome evaluation
- Complications of exercise
- Other considerations
- The older patient
- Cardiac failure
- Valvular heart disease
- Congenital heart disease
- Compliance
- Cost-effectiveness
- Legal aspects.

### **CARDIOPULMONARY TRANSPLANTATION (Overview with reference to the Physical Therapist)**

- Introduction
- Assessment
- The transplantation process
- Donors
- Operative procedures
- Postoperative care
- Rejection of the transplanted organs
- Immunosuppressant
- Special considerations for the physiotherapist
- Denervation of the heart/lungs
- Infection/rejection
- Physiotherapy management.

### **HYPERVENTILATION**

- Introduction
- Signs and symptoms

- Causes of hyperventilation
- Personality
- Diagnostic tests
- Breathing patterns
- Treatment
- The assessment
- Treatment plan
- Breathing education
- Breathing pattern re-education
- Compensatory procedures in the short term
- Planned rebreathing
- Speech
- Home programme
- Exercise and fitness programme
- Group therapy.

### **BRONCHIECTASIS, PRIMARY CILIARY DYSKINESIA AND CYSTIC FIBROSIS**

- Bronchiectasis
- Medical management
- Physiotherapy
- Evaluation of physiotherapy
- Primary ciliary dyskinesia

- Medical management
- Physiotherapy
- Evaluation of physiotherapy
- Cystic fibrosis
- Medical management
- Physiotherapy
- Evaluation of physiotherapy
- Continuity of care.

### **LAB WORK**

- Principles of assessment and outcome measures
- Documentation in SOAP notes format
- Evidence based cardiopulmonary Physical Therapy Treatment protocols.
- Airway clearance
- Breathing exercises
- Postural drainage
- Cardio pulmonary exercise prescriptions
- Practical related to the course work

### **RECOMMENDED BOOKS**

1. Physiotherapy in Respiratory Care; An evidence based approach to respiratory and cardiac management, By Alexandra Hough (3<sup>rd</sup> Edition) Nelson Thornes.
2. Essentials of Cardiopulmonary Physical Therapy (2<sup>nd</sup> Edition) By Hillegass and Sadowsky.
3. *Physiotherapy for respiratory and cardiac problems*, By: Jennifer A. Pryor & Barbara A. Webber, 2<sup>nd</sup> edition, Churchill Livingstone.
4. *Tidy's Physiotherapy* by Thomas A Skinner & Piercy.
5. *Therapeutics Exercises and Technique* by Carolyn Kisner&Laynn Allen Colby 5<sup>th</sup>& 6th edition.
6. *Cash's Text book of General Medical & Surgical Condition for Physiotherapists* by Patrica A. Downie.
7. *Cash's Textbook of chest, heart and vascular condition for physiotherapist* by Patrica A. Downie.
8. *Chest Physio for the War wounded*, by Mahboob-urRehman, National Book Foundation.

### **PROSTHETICS & ORTHOTICSCREDIT HOURS 2(2-0)**

#### **COURSE DESCRIPTION**

This course intends to study prosthetic and orthotic management as applied to a variety of patient populations across a life span. It also addresses the considerations of various pathologies and medical, surgical management to formulate appropriate patient examinations, evaluation, diagnosis, prognosis and intervention that are consistent with physical therapy practice guidelines. Principles of normal biomechanics, pathomechanics, physiology and Pathophysiology will be a major focus for evaluation, intervention and education of the vascular, neuromuscular, and / or musculoskeletal compromised patient to utilize prosthetic or orthotic devices. Basic principles of mechanical physics and material characteristics will be applied.

## **LEARNING OBJECTIVE**

- Describe various types of prosthetics & Orthotics
- Discuss the prescription of orthotics and prosthetics according to the different conditions

## **COURSE CONTENTS**

### **ORTHOTICS**

#### **INTRODUCTION TO ORTHOTICS**

- Basic Terminology
- Historical Background
- Factors In Prescription Orthotics
- Nomenclature of Orthotics
- Biomechanical Principles
- Materials Used in Orthotics Manufacturing
- Methods of Construction.

#### **FOOT ORTHOSES**

- Shoe Style
- Parts of Shoes
- Special Purpose Shoes
- Foot Examination
- Orthotics Interventions
- Fabrication Options
- Pediatric Foot Orthoses
- Guideline for Prescription Foot Orthoses.

#### **ANKLE FOOT ORTHOSES**

- Plastic Ankle Foot Orthoses
- Lather Metal Ankle Foot Orthoses
- Composite Materials
- Weight Relieving Ankle Foot Orthoses

- Support (Fabric , Leather, Gel And Air )
- Contracture Reducing Ankle Foot Orthoses
- Guidelines for Prescription Ankle Foot Orthoses.

#### **KNEE ANKLE FOOT ORTHOSES AND KNEE ORTHOSES**

- Plastic Metal Knee Ankle Foot Orthoses
- Knee Immobilizer
- Supra- Condylar Knee Ankle Foot Orthoses
- Weight Relieving Orthoses, Fracture Orthoses
- Lather Metal Knee Ankle Foot Orthoses
- Knee Orthoses
- Guidelines for Prescription Knee Ankle Foot Orthoses.

#### **ORTHOSES FOR PARAPLEGIA AND HIP DISORDERS**

- Paraplegia
- Standing Frames
- Orthoses Designed For Ambulation
- Functional Electrical Stimulation



- Specific Devices for Paraplegia
- Hip Orthoses
- Guidelines for Prescription.

### **EVALUATION PROCEDURES FOR LOWER LIMB ORTHOSES**

- Need of Evaluation
- Static Evaluation
- Dynamic Evaluation
- Gait Disorders with Orthoses Usage.

### **TRUNK AND CERVICAL ORTHOSES**

- Trunk Orthoses
- Trunk Orthoses Evaluation
- Scoliosis and Kyphosis Orthoses
- Scoliosis And Kyphosis Orthoses Evaluation
- Cervical Orthoses
- Cervical Orthoses Evaluation
- Guideline for Prescription.

### **UPPER LIMB ORTHOSES**

- Hand And Wrist Hand Orthoses
- Forearm And Elbow Orthoses
- Shoulder Orthoses, Fabrication Option
- Upper limb Orthoses Evaluation (Hand, Wrist, Fingers, Shoulder and Elbow)
- Guideline for Prescription.

### **ORTHOSES FOR BURNS AND OTHER SOFT TISSUE DISORDERS**

- Importance of Orthoses for Burns and Other Soft Tissue Disorders
- Orthoses for Burn Management
- Orthoses for Patients with Soft Tissues Problem Associated With Neuromuscular Disorders.

### **GOAL SETTING AND TREATMENT PLAN**

- Long-Term Goals
- Short-Term Goals
- Treatment Planning
- Criteria for Discharge
- Care of Orthoses.

### **PROSTHETICS**

#### **EARLY MANAGEMENT**

- Clinic Team Approach to Rehabilitation
- Amputation Surgery: Osteomyoplastic Reconstructive Technique
- Postoperative Management
- Pain Management
- Skin Disorders and Their Management
- Psychological Consequences of Amputation.

#### **REHABILITATION OF ADULTS WITH LOWER-LIMB AMPUTATIONS**

- Partial Foot and Syme's Amputations and Prosthetic Designs
- Transtibial Prosthetic Designs
- Transfemoral Prosthetic Designs
- Hip Disarticulations and Transpelvic Prosthetic Designs
- Basic Lower-Limb Prosthetic Training.

#### **REHABILITATION OF ADULTS WITH UPPER-LIMB AMPUTATIONS**

- Body-Powered Upper-Limb Prosthetic Designs
- Upper-Limb Externally Powered Prosthetic Designs
- Training Patients with Upper-Limb Amputations.

#### **BEYOND THE BASICS**

- Special Considerations with Children
- Rehabilitation Outcomes

- Adaptive Prostheses for Recreation
- Future Prosthetic Advances and Challenges
- Future Surgical and Educational Advances and Challenges

### RECOMMENDED BOOKS

1. *Prosthetics and Patient Management: A Comprehensive Clinical Approach* By: Kevin Carroll; Joan Edelstein.
2. *Orthotics a comprehensive clinical approach* By: Joan E Eldestein & Jan Bruckner.

## CLINICAL DECISION MAKING & DIFFERENTIAL DIAGNOSIS CREDIT HOURS 3(3-0)

### COURSE DESCRIPTION

The course will cover the principles and methods of clinical screening in physical therapy practice. A basic format for musculoskeletal, neuromuscular, Integumentary, and cardiopulmonary screening in physical therapy will be presented, with a focus on differential diagnosis within the scope of physical therapy practice, and incorporation of the role of the physical therapist as it interfaces with the role of the physician. A clarification of red-flags that differentiate a systemic condition from a neuro-musculoskeletal condition will be a continuing theme throughout the course. Decision-making skills related to physical therapy will be emphasized through the use of patient case scenarios with a focus on when to treat, and when to refer. Strategies to effectively and appropriately communicate with health care colleagues and patients regarding medical diagnostic information and medical status will be introduced.

### LEARNING OBJECTIVES

- Discuss the screening and differentiate the medical conditions
- Discuss clinical decision making in physical therapy.

### COURSE CONTENTS

#### SCREENING AND INTERVIEWING, THE PT SCOPE OF PRACTICE:

##### TO REFER OR

##### TREATINTRODUCTION TO

##### SCREENING FOR REFERRAL IN PHYSICAL THERAPY

- Reasons to Screen
- Screenings and Surveillance
- Diagnosis by the Physical Therapist
- Differential Diagnosis Versus Screening
- Direct Access
- Decision-Making Process

- Case Examples and Case Studies.

##### INTRODUCTION TO THE INTERVIEWING PROCESS

- Concepts in Communication
- Cultural Competence
- The Screening Interview
- Subjective Examination
- Core Interview
- Hospital Inpatient Information
- Physician Referral.

## **OVERVIEW OF THE PHYSIOLOGY OF PAIN AND SYSTEMIC CAUSES OF PAIN**

- Mechanisms of Referred Visceral Pain
- Multi segmental Innervations
- Assessment of Pain and Symptoms
- Sources of Pain
- Types of Pain
- Comparison of Systemic Versus Musculoskeletal Pain
- Patterns
- Characteristics of Viscerogenic Pain,
- Screening for Emotional and Psychologic Overlay
- Screening for Systemic Versus Psychogenic
- Symptoms
- Physician Referral.

## **PHYSICAL ASSESSMENT AS A SCREENING TOOL**

- General Survey
- Techniques of Physical Examination
- Integumentary Screening Examination
- Nail Bed Assessment
- Lymph Node Palpation
- Musculoskeletal Screening Examination
- Neurologic Screening Examination
- Regional Screening Examination
- Systems Review
- Physician Referral.

## **SCREENING FOR HEMATOLOGIC DISEASE**

- Signs and Symptoms of Hematologic Disorders
- Classification of Blood Disorders
- Physician Referral.

## **SCREENING FOR CARDIOVASCULAR DISEASE**

- Signs and Symptoms of Cardiovascular Disease
- Cardiac Pathophysiology
- Cardiovascular Disorders
- Laboratory Values.

## **SCREENING FOR THE EFFECTS OF CARDIOVASCULAR MEDICATIONS**

- Physician Referral.

## **SCREENING FOR PULMONARY DISEASE**

- Signs and Symptoms of Pulmonary Disorders
- Inflammatory/Infectious Disease
- Genetic Disease of the Lung
- Occupational Lung Diseases
- Pleuropulmonary Disorders
- Physician Referral.

## **SCREENING FOR GASTROINTESTINAL DISEASE**

- Signs and Symptoms of Gastrointestinal Disorders
- Gastrointestinal Disorders
- Physician Referral.

## **SCREENING FOR HEPATIC AND BILIARY DISEASE**

- Hepatic and Biliary Signs and Symptoms
- Hepatic and Biliary Pathophysiology
- Gallbladder and Duct Diseases
- Physician Referral.

## **SCREENING FOR UROGENITAL DISEASE**

- Signs and Symptoms of Renal and Urological Disorders,
- The Urinary Tract
- Renal and Urological Pain
- Renal and Urinary Tract Problems
- Physician Referral.

## **SCREENING FOR ENDOCRINE AND METABOLIC DISEASE**

- Associated Neuromuscular and Musculoskeletal Signs and Symptoms
- Endocrine Pathophysiology
- Introduction to Metabolism
- Physician Referral.

## **SCREENING FOR IMMUNOLOGIC DISEASE**

- Using the Screening Model
- Immune System Pathophysiology
- Physician Referral
- Screening for Cancer
  - Cancer Statistics
  - Risk Factor Assessment
  - Cancer Prevention
  - Major Types of Cancer
  - Metastases
  - Clinical Manifestations of Malignancy
- Oncologic Pain
- Side Effects of Cancer Treatment
- Cancers of the Musculoskeletal System
- Primary Central Nervous System Tumors
- Cancers of the Blood and Lymph System
- Physician Referral.

## **SCREENING THE HEAD, NECK, AND BACK**

- Using the Screening Model to Evaluate the Head, Neck, or Back,
- Location of Pain and Symptoms
- Sources of Pain and Symptoms
- Screening for Oncologic Causes of Back Pain
- Screening for Cardiac Causes of Neck and Back Pain
- Screening for Peripheral Vascular Causes of Back Pain

- Screening for Pulmonary Causes of Neck and Back Pain
- Screening for Renal and Urologic Causes of Back Pain,
- Screening for Gastrointestinal Causes of Back Pain
- Screening for Liver and Biliary Causes of Back Pain
- Screening for Gynecologic Causes of Back Pain
- Screening for Male Reproductive Causes of Back Pain
- Screening for Infectious Causes of Back Pain
- Physician Referral.

## **SCREENING THE SACRUM, SACROILIAC, AND PELVIS**

- The Sacrum and Sacroiliac Joint
- The Coccyx
- The Pelvis
- Physician Referral.

## **SCREENING THE LOWER QUADRANT: BUTTOCK, HIP, GROIN, THIGH, AND LEG**

- Using the Screening Model to Evaluate the Lower Quadrant
- Trauma as a Cause of Hip, Groin, or Lower Quadrant Pain
- Screening for Systemic Causes of Sciatica
- Screening for Oncologic Causes of Lower Quadrant Pain
- Screening for Urologic Causes of Buttock, Hip, Groin, or Thigh Pain
- Screening for Male Reproductive Causes of Groin Pain
- Screening for Infectious and Inflammatory Causes of Lower Quadrant Pain
- Screening for Gastrointestinal Causes of Lower Quadrant Pain
- Screening for Vascular Causes of Lower Quadrant Pain

- Screening for Other Causes of Lower Quadrant Pain
- Physician Referral.

### **SCREENING THE CHEST, BREASTS, AND RIBS**

- Using the Screening Model to Evaluate the Chest, Breasts, or Ribs
- Screening for Oncologic Causes of Chest or Rib Pain
- Screening for Cardiovascular Causes of Chest, Breast, or Rib Pain
- Screening for Pleuropulmonary Causes of Chest, Breast, or Rib Pain
- Screening for Gastrointestinal Causes of Chest, Breast, or Rib Pain
- Screening for Breast Conditions that Cause Chest or Breast Pain
- Screening for Other Conditions as a Cause of Chest, Breast, or Rib Pain
- Screening for Musculoskeletal Causes of Chest, Breast, or Rib Pain
- Screening for Neuromuscular or Neurologic Causes of Chest, Breast, or Rib Pain
- Physician Referral.

### **RECOMMENDED BOOKS**

1. Goodman CC, Snyder TEK. *Differential Diagnostics for Physical Therapists: Screening for Referral*. Saint Louis, MO: Saunders: Elsevier; 2006. ISBN: 978-0-7216-0619-4.
2. APTA. *Guide to Physical Therapy Practice: Revised second edition*. Alexandria, VA: American Physical Therapy Association; 2003. ISBN: 978-1-887759-85.
3. Additional readings as assigned by the instructors.

### **MANUAL THERAPY CREDIT HOURS 3(2-1)**

#### **COURSE DESCRIPTION**

This course provides review of all Manual Therapy techniques, covering spine, peripheral joint mobilizations, Temporo-Mandibular joint, advanced myofascial trigger point therapy, Proprioceptive training, muscle energy techniques, strain counter strain

### **SCREENING THE SHOULDER AND UPPER EXTREMITY**

- Using the Screening Model to Evaluate Shoulder and Upper Extremity
- Screening for Pulmonary Causes of Shoulder Pain
- Screening for Cardiac Causes of Shoulder Pain
- Screening for Gastrointestinal Causes of Shoulder Pain
- Screening for Liver and Biliary Causes of Shoulder Pain
- Screening for Rheumatic Causes of Shoulder Pain
- Screening for Infectious Causes of Shoulder Pain
- Screening for Oncologic Causes of Shoulder Pain
- Screening for Gynecologic Causes of Shoulder Pain
- Physician Referral.

### **CLINICAL DECISION MAKING (CDM)**

- Definition
- Process of CDM
- Skills required for CDM
- Models of CDM

techniques, neuromobilization combination techniques and mobilization, manipulation techniques.

## LEARNING OBJECTIVES

- Discuss various concepts of manual therapy techniques
- Discuss principles of manual therapy
- Demonstrate skills in application of manual therapy techniques

## COURSE CONTENTS

### FOUNDATION CONCEPTS TO MANUAL THERAPY

#### OMT KALTENBORN-EVJENTH CONCEPT

- History
- Special features
- Overview.

## PRINCIPLES

### SPINAL MOVEMENT

- The mobile segment
- Spinal range of movement
- Joint positioning for evaluation and treatment
- Three-dimensional joint positioning
- Resting position
- Actual resting position
- Non resting positions
- Joint locking
- Bone and joint movement
- Rotations of a vertebral bone
- Standard bone movements
- Combined bone movements
- Coupled movements
- Non coupled movements
- Joint roll-gliding associated with bone rotations
- Joint roll-gliding
- Abnormal roll-gliding
- Translation of vertebral bone
- Joint play associated with bone translation.

### TRANSLATORIC JOINT PLAY

- The Kaltenbom Treatment Plane
- Translatoric Joint Play Movements
- Determining the direction of restricted gliding
- Glide test
- Kaltenbom Convex-Concave Rule
- Grades of translatoric movement
- Normal grades of translatoric movement (Grades I - III)
- Palpating resistance to normal movement
- Pathological grades of translatoric movement
- Using translatoric grades of movement.

### TESTS OF FUNCTION

- Principles of function testing
- Assessing quantity of movement
- Measuring rotatoric movement with a device
- Manual grading of rotatoric movement ( - scale)
- Assessing quality of movement
- Quality of movement to the first stop
- End-feel: Quality of movement after the first stop
- Elements of function testing
- Active and passive rotatoric movements

- Testing rotatoric movement
- Localization tests
- Differentiating articular from extra-articular dysfunction
- Differentiating muscle shortening from muscle spasm
- Translatory joint play tests
- Resisted movements
- Passive soft tissue movements
- Additional tests.

### **OMT EVALUATION**

- Goals of the OMT evaluation
- Physical diagnosis
- Indications and contraindications
- Measuring progress
- Elements of the OMT evaluation
- Screening exam
- Detailed exam
- History
- inspection
- Tests of function
- Palpation
- Neurologic and vascular tests
- Medical diagnostic studies
- Diagnosis and trial treatment.

### **SPINAL JOINT MOBILIZATION**

- Goals of joint mobilization
- Mobilization techniques
- Pain relief mobilization
- Pain-relief traction mobilization (Grade I -IISZ)
- Vibrations and oscillations
- Relaxation mobilization
- Relaxation-traction mobilization (Grade I -II)
- Stretch mobilization
- Stretch-traction mobilization (Grade III)
- Stretch-glide mobilization (Grade /)
- Manipulation
- If traction exacerbates symptoms

- A voiding high-risk manual treatment
- Rotation mobilization
- Joint compression.

### **OMT TREATMENT**

- Elements of OMT
- Treatment to relieve symptoms
- Immobilization
- Thermo-Hydro-Electric (T-H-E) therapy
- Pain-relief mobilization
- Special procedures for pain relief
- Treatment to increase mobility
- Soft tissue mobilization
- Passive soft tissue mobilization
- Active-facilitated soft tissue mobilization
- Muscle stretching principles
- Joint mobilization to increase mobility
- Neural tissue mobilization
- Specialized exercise to increase mobility
- Treatment to limit movement
- To inform, instruct and train
- Research.

### **SPINAL SYNDROMES**

- Notes on spinal syndromes
- Cervical syndromes
- Thoracic syndromes
- Lumbar syndromes
- Neurologic evaluation of nerve root syndromes
- Sensory innervation of the skin
- Sensory innervation of deep structures
- Motor innervation
- Common nerve root syndromes.

### **MANUAL THERAPY ASSESSMENT**

- The Maitland's and Mulligan concept
- Subjective examination
- Physical examination
- Examination of the temporomandibular joint
- Examination of the upper cervical spine
- Examination of the cervicothoracic spine
- Examination of the thoracic spine
- Examination of the lumbar spine.

### **THE SUBJECTIVE EXAMINATION STEP BY STEP**

- Introduction
- Body chart
- Behavior of symptoms
- Special questions
- History of the present condition (HPC)
- Past medical history (PM H)
- Social and family history (SH, FH)
- Plan of the physical examination
- Case scenarios
- Counterfeit clinical presentations.

### **PHYSICAL EXAMINATION STEP- BY- STEP**

- Introduction
- Observation
- Joint tests
- Muscle tests
- Neurological tests
- Special tests
- Functional ability
- Palpation
- Accessory movements
- Completion of the physical examination.

### **TECHNIQUES**

#### **TECHNIQUE PRINCIPLES**

- Learning manual techniques
- Applying manual techniques
- Objective
- Starting position
- Patient's position
- Therapist's position
- Hand placement and fixation/stabilization
- Grip
- Therapist 's stable hand
- Therapist's moving hand
- Procedure
- Joint pre-positioning
- Mobilization technique
- Symbols
- Recording
- Identifying an intervertebral segment
- The Star Diagram.

### **PELVIS**

- Functional anatomy and movement
- Notes on evaluation and treatment
- Pelvis tests and mobilizations

### **LUMBAR SPINE**

- Functional anatomy and movement
- Notes on evaluation and treatment
- Lumbar tests and mobilizations

### **THORACIC SPINE AND RIBS**

- Functional anatomy and movement
- Notes on evaluation and treatment
- Thoracic tests and mobilizations.

### **CERVICAL SPINE**

- Functional anatomy and movement
- Notes on evaluation and treatment



- Cervical tests and mobilizations.

### **UPPER CERVICAL SPINE**

- Functional anatomy and movement
- Notes on evaluation and treatment
- Upper cervical tests and mobilizations.

### **JAW**

- Functional anatomy and movement
- Jaw examination scheme
- Jaw tests and mobilizations.

### **SPINAL MOBILIZATIONS**

#### **THE CERVICAL AND UPPER THORACIC SPINES**

- NAGS
- REVERSE NAGS
- SNAGS
- SELF SNAGS
- Spinal Mobilization with arm Movement
- Other mobilization with movement techniques (MWMS) for the Cervical and Upper Thoracic Spines.

#### **THE UPPER CERVICAL SPINE SPECIAL TECHNIQUES**

- The acute Wry Neck
- Headaches
- Vertigo, Nausea and other vertebral artery Signs.

### **LAB WORK**

In the laboratory sessions, Supervised evaluation and manual therapy treatment techniques will be demonstrated and practiced, including joint and soft-tissue mobilization, manipulations, and posture and movement retraining in the physiotherapy clinic/Ward and Orthopaedic clinic/Ward, Indoor as well as outdoor. Various reflective case studies related to manual therapy of the spine and TM joint will be assigned to the students.

**Note:** The students are expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place. It is a

### **THE LUMBAR SPINE**

- SNAGS
- SELF SNAGS

### **THE SACROILIAC JOINTS (S/I) JOINTS**

### **THE THORACIC SPINE**

### **THE RIB CAGE**

### **PERIPHERAL JOINT MOBILIZATION TECHNIQUES**

### **INTEGRATIVE MANUAL THERAPY**

- Postural Compensations of the spine
- Muscle Energy and 'Beyond' Technique for the spine
- Treatment of spine Hypertonicity for Synergic Pattern
- Release with Strain and Counter strain Technique
- Myofascial Release
- Tendon Release Therapy for Treatment of Tendon Tissue Tension with Advanced Strain and Counter strain Technique
- Ligaments: a Tensile Force Guidance System: Treatment with Ligament Fiber Therapy
- Procedures and Protocols to correct spinal Dysfunction with Integrative Manual Therapy.

reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed/observed

### RECOMMENDED BOOKS

1. *Manual Mobilization of the Joints TheKaltenborn Method of Joint. Examination and Treatment Volume I, The Extremities* By: Freddy M. Kaltenbom in collaboration with Olaf Evjenth, TraudiBaldauf. Kaltenbom, Dennis Morgan, and Eileen Vollowitz,OPTP Minneapolis, Minnesota, USA.
2. *Manual Therapy* By: Ola Grimsby, the Ola Grimsby institute San Diego.
3. *Integrative Manual therapy for the upper and lower extremities* By: Sharon weiselfish, North Atlantic books Berkeley, California.
4. *Orthopedic manual therapy an evidence-based approach* by: Chad Cook.
5. *Orthopaedic Manual Therapy Diagnosis Spine and Temporomandibular Joints* By: Aad van der.
6. *Translatory Spinal Manipulation* By: John R. Krauss, Olaf Evjenth, and Doug Creighton John R. Krauss A Lakeview Media L. L.C. Publication.
7. *euromusculoskeletal Examination and Assessment A Handbook for Therapists.*
8. By: Nicola J Petty, Ann P Moore &G D Maitland, Second Edition Churchill Livingstone.
9. *Myofascial Manipulation Theory and Clinical Application, Second Edition* By: Robert I. Cantu, Alan J. Grodin an Aspen Publication Aspen Publishers, Inc. Gaithersburg, Maryland 2001.
10. *Maitland's Vertebral Manipulation* Seventh Edition By: Geoffrey D. Maitland.
11. *Musculoskeletal manual medicine, diagnosis and treatment* by Jiri Dovark, Vaclav Dovark, Werner Schneider etc.
12. *Manual therapy, NAGS, SNAGS, MWMS etc*by Brian R Mulligan fifth edition.

### PROFESSIONAL PRACTICE IN PHYSICAL THERAPY CREDIT HOURS 2(2-0)

#### COURSE DESCRIPTION

The course will discuss the role, responsibility, ethics administration issues and accountability of the physical therapists. The course will also cover the changes in the profession and its responsibilities to the profession, the public and to the health care team.

#### LEARNING OBJECTIVES

- Discuss cultural competencies, education techniques, ethics, law & administration in Physical therapy practices.

#### COURSE CONTENTS

##### THE PHYSICAL THERAPIST AS PROFESSIONAL

- What does professional mean?
- Preliminary definitions of profession and professional

- Sociological perspective
- Structural approach
- Processual approach
- Characteristics of professions cited in the literature

- Power approach
- Dimensions of occupation & profession
- Autonomy, self-regulation of ethical standards, and accountability
- Privileges of autonomous practice in 2020
- Self-regulation of ethical standards
- Accountability of professionals
- Individual professionalism—professionalism without professions?
- The history of a profession
- Professional recognition.

### **CONTEMPORARY PRACTICE ISSUES**

- A vision for the future
- The doctorate in physical therapy
- Perspective of the profession
- Perspective of the practitioner
- Direct access issue
- Selected curriculum requirements from evaluative criteria for physical therapist
- Plan of care
- Social responsibility
- Career development
- Physical therapy practice patterns
- Components of a practice pattern
- Important factors that affect health.

### **THE FIVE ROLES OF THE PHYSICAL THERAPIST**

#### **THE PHYSICAL THERAPIST AS PATIENT/CLIENT MANAGER**

- evaluation and diagnosis
- Diagnosis as clinical decision making
- Prognosis
- Discharge planning and discontinuance of care
- Discontinuance of care
- Outcomes
- Clinical decision making
- Referral relationships
- Interpersonal relationships
- Ethical and legal issues

- Informed consent
- Managed care and fidelity.

#### **THE PHYSICAL THERAPIST AS CONSULTANT**

- Physical therapy consultation
- Building a consulting business
- The consulting process
- The skills of a good consultant
- Trust in the consultant/client relationship
- Ethical and legal issues in consultation
- Components of a consulting agreement.

#### **THE PHYSICAL THERAPIST AS CRITICAL INQUIRER**

- History of critical inquiry
- Evidence-based medicine
- Outcomes research
- Whose responsibility is research?
- Roles of the staff physical therapist in critical inquiry
- Collaboration in clinical research
- Ethical and legal issues in critical inquiry.

#### **THE PHYSICAL THERAPIST AS EDUCATOR**

- History of physical therapy education
- Contemporary educational roles of the physical therapist
- Teaching opportunities in continuing education
- Academic teaching opportunities
- Theories of teaching and learning in professional education
- Ethical and legal issues in physical therapy education.

#### **THE PHYSICAL THERAPIST AS ADMINISTRATOR**

- History of physical therapy administration
- Contemporary physical therapy administration
- Patient/client management
- First-line management
- Midlevel managers and chief executive officers
- Leadership
- Ethical and legal issues.

### **PROFESSIONAL DEVELOPMENT, COMPETENCE, AND EXPERTISE**

- Lifelong process of skill enhancement
- The professional development continuum: from competence to expertise
- Activities that promote professional development
- Evaluation of competence and professional development
- Professional development planning
- Possible evaluators of professional achievement
- Career advancement
- Organizational impact on professional development.

### **FUTURE CHALLENGES IN PHYSICAL THERAPY**

#### **PHYSICAL THERAPY'S MORAL MISSION**

- The future in three realms, individual, institutional & societal.
- Professionalism and the physical therapist.
- Practical related to the course work

#### **CONSULTATION IN PHYSICAL THERAPY**

- Introduction to Consultation in Physical Therapy:

- The Way the Consultation is Carried out:
- Patient-Related Consultation:
- Client-Related Consultation:
- Consultation Activities of Physical Therapist:
- Responding to a request for a second opinion:
- Advising a referring practitioner about the indications for intervention:
- Advising employers about the requirements of the Patients/Clients with Disabilities:
- Instructing employers about pre-placement in accordance with provisions of the Patients/Clients with Disabilities:
- Educating other health practitioners (eg, in injury prevention):
- Performing environmental assessments to minimize the risk of falls:
- Conducting a program to determine the suitability of employees for specific job assignments:
- Examining school environments and recommending changes to improve accessibility for students with disabilities:
- Developing programs that evaluate the effectiveness of an intervention plan in reducing work-related injuries:
- Working with employees, labor unions, and government agencies to develop injury reduction and safety programs:
- Participating at the local, state, and federal levels in policymaking for physical therapy services:
- Providing expert legal opinion:

## **SCREENING IN PHYSICAL THERAPY**

- Introduction to Screening in Physical Therapy
- The Way the Screening is Carried Out
- The Basis of Screening
- Problem-focused, systematic collection and analysis of data to
- Identify individuals at risk in order to provide primary Prevention:
- Identify those in need of physical therapy intervention or other rehabilitative services
- Ascertain the presence of positive findings that require attention by another health care practitioner in order to provide secondary or tertiary prevention
- Candidates for Screening
- Screening Activities of Physical Therapist
  - Identifying children who may need an examination for idiopathic scoliosis
  - Identifying risk factors in the workplace
  - Pre-performance testing of individuals active in sports
  - Identifying an individual's lifestyle factors (eg, exercise, stress, weight) that may lead to increased risk for serious health problems
  - Identifying elderly individuals in a community center or nursing home who are at high risk for slipping, tripping, or falling

## **DELEGATION IN PHYSICAL THERAPY**

- Introduction to Delegation in Physical Therapy:
- Delegation Pertinent Responsibilities of Physical Therapist:

- Interpretation of record of patient referred by health care provider:
- Initial evaluation and problem identification of patient:
- Development of plan of care and goals of treatment:
- Determination of appropriate portion of treatment program to be delegated to a physical therapist's assistant:
- Delegation of treatment to be administered by physical therapist's assistant:
- Instruction to the physical therapist's assistant regarding:
  - The specific program of treatment of a patient:
  - Any precaution to be taken to protect a patient:
  - Any special problem of a patient:
  - Any procedure which should not be administered to a patient:
  - The proper methods for documenting the treatment that is administered to the patient:
  - Any other information required to treat a patient:
  - Treatment review in a timely manner:
  - Documentation of goal of treatment:
  - Revision of plan of care when indicated:
  - Revision of Documentation done by PTA during periodic reviews of the patient and make note of those reviews in the evaluation or reassessment of the patient:
  - Case management and dissemination of any written and oral reports:

- Performance of final evaluation upon the discharge:
- When and When Not to Delegate:
  - National Perspectives:
  - International Perspectives:
- To Whom and to Whom Not to Delegate:
  - National Perspectives:
  - International Perspectives:
- Supervision of Treatment Program Delegated to a Physical Therapist's Assistant by Physical Therapist:

### **CULTURAL COMPETENCY IN PHYSICAL THERAPY**

- General Consideration of Cultural Competence in Physical Therapy
  - Cultural Competence
  - Key Concepts
    - Culture
    - Principles and Assumptions
    - Power and Privilege
    - Exploring Differences
    - Equitable Access
    - Racism & Oppression
  - Elements of Cultural Competence
  - National Diverse Communities
  - International Diverse Communities
  - Providing Health Care in a Multicultural Society
  - Patient and Client Encounter Questions
  - LIAASE: A General Cultural Competence Tool
  - Health Professional Self-Assessment Tool
  - Steps to Cultural Study and Cultural Competence
  - Therapist's vs Patient's Culture
  - Physical Therapist's Culture
  - Understanding Patient's Culture
- Addressing Conflict

- LIAASE (Learn, Inquire, Avoid Polarization, Avoid Arguing and Defending, Show Empathy ): A General Cultural Competence Tool
- Health Professional Self-Assessment Tool

### **STANDARDS OF COMPETENCE IN PHYSICAL THERAPY**

- Need for developing standards of competence
- Assumptions behind the standards
- Why have standards not been developed for the physical therapist assistant
- Continuing competence
- How were these standards developed
- How are the standards presented
- To whom do these standards apply
- Domain 1-Professional Practice
  - Professional Accountability
  - Professional Behavior
  - Professional Development
- Domain 2-Patient/Client Management
  - Examination, Evaluation And Diagnosis
  - Plan Of Care
  - Implementation
  - Education
  - Discharge
- Cultural Heritage
- Communication in Cultural Context
- Family Roles and Organization Within Culture
- Cultural Workforce Issues
- High Risk Health Behaviors, Biocultural Ecology, and Nutrition in Light of Culture:
- Spirituality and Cultural Death Rituals
- Cultural Healthcare Practices and

- Roles of Healthcare Practitioners
- Selected Ethnic Cultures
  - Cultural Considerations for
    - Pakistani Cultures:
    - American / Black Cultures
    - Chinese Culture
    - Latino/Hispanic Client
    - American Indian Cultures
    - Middle Eastern Cultures
    - Jewish Clients
- Culture of Various Physical Therapy Populations
  - Disability across Cultures
  - Veteran and Military Culture and Physical Therapy
  - The Challenge and Culture of Poverty and Homelessness
  - Physical Therapy Cultural Encounters in Pediatrics
  - Physical Therapy Cultural Encounters in Geriatrics
- Professional Development, Competence, and Expertise
- Lifelong process of skill enhancement
- The professional development continuum: from competence to expertise
- Activities that promote professional development
- Evaluation of competence and professional development:
- Professional development planning
- Possible evaluators of professional achievement
- Career advancement
- Organizational impact on professional development
- Future Challenges in Physical Therapy
  - Physical therapy's moral mission
  - The future in three realms, individual, institutional & societal

- Professionalism and the physical therapist

## **LAWS, REGULATIONS, AND POLICIES FOR PHYSICAL THERAPY**

- National Laws, Regulations, and Policies for Physical Therapy:
- International Laws, Regulations, and Policies for Physical Therapy:
  - Arab Countries' Laws, Regulations, and Policies for Physical Therapy (e.g., UAE and KSA etc):
  - European Laws, Regulations, and Policies for Physical Therapy:
  - Australian & New Zealander Laws, Regulations, and Policies for Physical Therapy:
  - American Laws, Regulations, and Policies for Physical Therapy:
- Statutes and Regulations:
- Statutes:
- Regulations
- Creating Statutes and regulation:
- The Court System:
  - Criminal versus Civil Law
- Criminal Law:
- Civil Law:
- Policies:
- The American Physical Therapy Association:
- Payer Reimbursement Policies:
- Employer Policies:
  - An Overview of Laws, Regulations, and Policies of different States for Physical Therapy:
  - The roles of World Confederation for Physical Therapy (WCPT)

## **EDUCATION TECHNIQUES**

## **THE TEACHING-LEARNING PROCESS**

- Teaching Responsibilities:
- Components of the Teaching Process:
  - Analysis of the learner / assessment:
  - Analysis of data, formulation of objectives of instruction:
  - Analysis of instruction / planning:
  - Implantation:
  - Evaluation:
  - Documentation:

- Teaching and Learning in Academic Settings:
- Physical Therapy Education in the Digital Age: Leveraging Technologies to Promote Learning:
- Assessing and Improving the Teaching and Learning Process in Academic Settings:
- Authentic Assessment: Simulation-Based Education:
- Strategies for Planning and Implementing Inter-professional Education

## **EDUCATIONAL THEORY**

- Learning Theories:
  - Behaviorist:
  - Cognitive:
  - Humanist:
  - Adult learning:
- Behavioral Objectives from the Educational Domains:
  - Cognitive:
  - Affective:
  - Psychomotor:

## **EDUCATION IN PRACTICE ENVIRONMENTS**

- Preparation for Teaching in Clinical Settings:
- Techniques for Teaching in Clinical Settings:
- Qualities of a Good Clinical Teacher:
- Facilitating the Teaching and Learning of Clinical Reasoning:
- Patient Education and Health Literacy:
- Applied Behavioral Theory and Adherence: Models for
  - Practice:
- Teaching and Learning Psychomotor Skills:

## **EDUCATION IN THE ACADEMIC ENVIRONMENT**

- Curriculum Design for Physical Therapy Educational Programs:
- From Curricular Goals to Instruction: Preparing to Teach:

## **RECOMMENDED BOOKS**

1. *Professionalism in Physical Therapy: History, Practice, & Development*, Lisa L. Dutton, PT, PhD.
2. APTA. *Guide to Physical Therapy Practice: Revised second edition*. Alexandria, VA: American Physical Therapy Association; 2003. ISBN: 978-1-887759-85.
3. Handbook of Teaching for Physical Therapists
4. Katherine Shepard, Gail Jensen, 2011, ISBN: 978-1-4557-3470-2

## **INTEGUMENTARY PHYSICAL THERAPY CREDIT HOURS 2(2-0)**

### **COURSE DESCRIPTION**



This course includes a study of anatomy and physiology of the Integumentary system and pathological changes of the system and function, including diagnostic tests and measurements. The use of evidence-based physical therapy intervention for Integumentary conditions is emphasized. Topics will focus on comparing contemporary, traditional interventions and the impact of evolving technology in this area. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

## LEARNING OBJECTIVES

- Evaluate and assess integumentary conditions
- Demonstrate physical therapy intervention in integumentary conditions.

## MEDICAL TERMINOLOGY REGARDING INTEGUMENTARY SYSTEM

### WOUND CARE CONCEPTS

- Quality of Life and Ethical Issues
- Regulation and wound Care
- Skin, an Essential Organ
- Acute and Chronic Wound Healing
- Wound assessment
- Wound Bioburden
- Wound Debridement
- Wound Treatment Options
- Nutrition and wound care
- Seating, Positioning and support surfaces
- Pain Management and wounds.

### WOUND CLASSIFICATIONS AND MANAGEMENT STRATEGIES

- Pressure Ulcers
- Vascular Ulcers
- Diabetic Foot Ulcers

## RECOMMENDED BOOKS

1. Wound Care Essentials, practice principles, By Sharon Baranoski& Elizabeth A. Ayello.
2. APTA. *Guide to Physical Therapy Practice: Revised second edition*. Alexandria, VA: American Physical Therapy Association; 2003. ISBN: 978-1-887759-85.

## SUPERVISED CLINICAL PRACTICE – VCREDIT HOURS 3(0-3)

- Sickle Cell Ulcers
- Wounds in special Populations
- Complex wounds
- Atypical Wounds
- Wound Care; where we were, where we are, and where we are going

## BURNS

- Skin and appendage
- Classification of burns
- Types of burns
- Criteria of care in burn center
- Physical therapy in different phases of burns

## CASE HISTORIES

- Principles of assessment and outcome measures
- Documentation in SOAP notes format
- Evidence based integumentary Physical Therapy Treatment protocols.

**CARDIOVASCULAR AND PULMONARY**

| <b>SEMESTER</b> | <b>SUPERVISION</b>       | <b>FOCUS</b>                              | <b>WARDS</b>  | <b>COMPETENCIES</b> |
|-----------------|--------------------------|---|---|---------------------|
| 9               | Supervised by trained PT | Evaluation, Examination, and Intervention | Cardiovascular and pulmonary (IPD/OPD; surgical & non-surgical) | Listed below        |

**COURSE DESCRIPTION**

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to cardiovascular and pulmonary disorders. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, non-surgical, pediatric and geriatric,) Students learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course

**CLINICAL COMPETENCIES**

**EXAMINATION**

- Based on best available evidence select examination tests and measures that are appropriate for the patient/client
- Perform posture tests and measures of postural alignment and positioning.
- Perform gait, locomotion and balance tests including quantitative and qualitative measures such as:
- Balance during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Balance (dynamic and static) with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Gait and locomotion during functional activities with or without the
- Use of assistive, adaptive, orthotic, protective, supportive, or
- prosthetic devices or equipment to include:
- Bed mobility
- Transfers (level surfaces and floor)
- Wheelchair management
- Uneven surfaces
- Safety during gait, locomotion, and balance
- Perform gait assessment including step length, speed, characteristics of gait, and abnormal gait patterns.
- Characterize or quantify body mechanics during self-care, home management, work, community, tasks, or leisure activities.
- Characterize or quantify ergonomic performance during work (job/school/play):
- Dexterity and coordination during work
- Safety in work environment

- Specific work conditions or activities
- Tools, devices, equipment, and workstations related to work actions, tasks, or activities
- Characterize or quantify environmental home and work (job/school/play) barriers:
- Current and potential barriers
- Physical space and environment
- Community access
- Observe self-care and home management (including ADL and IADL)
- Measure and characterize pain to include:
- Pain, soreness, and nociception
- Specific body parts
- Recognize and characterize signs and symptoms of inflammation.
- Perform cardiovascular/pulmonary tests and measures including:
- Heart rate
- Respiratory rate, pattern and quality
- Blood pressure
- Aerobic capacity test\* (functional or standardized) such as the 6-minute walk test
- Pulse Oximetry
- Breath sounds – normal/abnormal
- Response to exercise (RPE)
- Signs and symptoms of hypoxia
- Peripheral circulation (deep vein thrombosis, pulse, venous stasis, lymphedema).

## **EVALUATION**

- Clinical reasoning
- Clinical decision making
- Synthesize available data on a patient/client expressed in terms of the International Classification of Function, Disability and Health (ICF) model to include body functions and structures, activities, and participation.
- Use available evidence in interpreting the examination findings.
- Verbalize possible alternatives when interpreting the examination findings.
- Cite the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision

## **DIAGNOSIS**

- Integrate the examination findings to classify the patient/client problem in terms of body functions and structures, and activities and participation (ie, practice patterns in the Guide)
- Identify and prioritize impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

## **PROGNOSIS**

- Determine the predicted level of optimal functioning and the amount of time required to achieve that level.
- Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame including
  - Age
  - Medication(s)
  - Socioeconomic status
  - Co-morbidities
  - Cognitive status
  - Nutrition
  - Social Support
  - Environment.

### **PLAN OF CARE**

- Goal setting
- Coordination of Care
- Progression of care
- Discharge
- Design a Plan of Care
- Write measurable functional goals (short-term and long-term) that are time referenced with expected outcomes
- Consult patient/client and/or caregivers to develop a mutually agreed to plan of care.
- Identify patient/client goals and expectations
- Identify indications for consultation with other professionals
- Make referral to resources needed by the patient/client (assumes knowledge of referral sources)
- Select and prioritize the essential interventions that are safe and meet the specified functional goals and outcomes in the plan of care (ie, (a) identify precautions and contraindications, (b) provide evidence for patient-centered interventions that are identified and selected, (c) define the specificity of the intervention (time, intensity, duration, and frequency), and (d) set realistic priorities that consider relative time duration in conjunction with family, caregivers, and other health care professionals)
- Establish criteria for discharge based on patient goals and current functioning and disability
- Coordination of Care
- Identify who needs to collaborate in the plan of care.
- Identify additional patient/client needs that are beyond the scope of physical therapist practice, level of experience and expertise, and warrant referral.
- Refer and discuss coordination of care with other health care professionals.
- Articulate a specific rationale for a referral.
- Advocate for patient/client access to services.
- Progression of Care
- Identify outcome measures of progress relative to when to progress the patient further.

- Measure patient/client response to intervention.
- Monitor patient/client response to intervention.
- Modify elements of the plan of care and goals in response to changing patient/client status, as needed
- Make on-going adjustments to interventions according to outcomes including environmental factors and personal factors and, medical therapeutic interventions.
- Make accurate decisions regarding intensity and frequency when adjusting interventions in the plan of care.
- Discharge Plan
- Re-examine patient/client if not meeting established criteria for discharge based on the plan of care.
- Differentiate between discharge of the patient/client, discontinuation of service, and transfer of care with re-evaluation.
- Prepare needed resources for patient/client to ensure timely discharge, including follow-up care
- Include patient/client and family/caregiver as a partner in discharge
- Discontinue care when services are no longer indicated.
- When services are still needed, seek resources and/or consult with others to identify alternative resources that may be available.
- Determine the need for equipment and initiate requests to obtain.

## **INTERVENTIONS**

- Safety, Emergency Care, CPR and First Aid
- Standard Precautions
- Body Mechanics and
- Positioning
- Categories of Interventions
  - Safety, Cardiopulmonary Resuscitation Emergency Care, First Aid
- Ensure patient safety and safe application of patient/client care.
- Perform first aid.
- Perform emergency procedures.
- Perform Cardiopulmonary Resuscitation (CPR).
- Precautions
- Demonstrate appropriate sequencing of events related to universal precautions.
- Use Universal Precautions.
- Determine equipment to be used and assemble all sterile and non-sterile materials.
- Use transmission-based precautions.
- Demonstrate aseptic techniques.
- Apply sterile procedures
- Properly discard soiled items
- Body Mechanics and Positioning
- Apply proper body mechanics (utilize, teach, reinforce, and observe)

- Properly position, drape, and stabilize a patient/client when providing physical therapy
- Coordination, communication, and documentation may include: Addressing required functions:
- Establish and maintain an ongoing collaborative process of decision-making with patients/clients, families, or caregivers prior to initiating care and throughout the provision of services.
- Discern the need to perform mandatory communication and reporting (eg, incident reports, patient advocacy and abuse reporting).
- Follow advance directives.
- B. Admission and discharge planning.
  - C. Case management.
  - D. Collaboration and coordination with agencies, including:
    - Home care agencies
    - Equipment suppliers
    - Schools
    - Transportation agencies
    - Payer groups
  - E. Communication across settings, including:
    - Case conferences
    - Documentation
    - Education plans
  - F. Cost-effective resource utilization.
  - G. Data collection, analysis, and reporting of:
    - Outcome data
    - Peer review findings
    - Record reviews
- H. Documentation across settings, following APTA's Guidelines for Physical Therapy Documentation, including:
  - Elements of examination, evaluation, diagnosis, prognosis, and Intervention
  - Changes in body structure and function, activities and participation
  - Changes in interventions
  - Outcomes of intervention
    - Interdisciplinary teamwork
    - Patient/client family meetings
    - Patient care rounds
    - Case conferences
- Referrals to other professionals or resources.
- Patient/client-related instruction may include:
  - Instruction, education, and training of patients/clients and caregivers regarding:
- Current condition, health condition, impairments in body structure and function, and activity limitations, and participation restrictions)
- Enhancement of performance
- Plan of care:

- Risk factors for health condition, impairments in body structure and function, and activity limitations, and participation restrictions.
- Preferred interventions, alternative interventions, and alternative modes of delivery
- Expected outcomes
- Health, wellness, and fitness programs (management of risk factors)
- Transitions across settings.

## **THERAPEUTIC EXERCISE MAY INCLUDE PERFORMING**

### **A. Aerobic capacity/endurance conditioning or reconditioning**

- Gait and locomotor training
- Increased workload over time (modify workload progression)
- Movement efficiency and energy conservation training
- Walking and wheelchair propulsion programs
- Cardiovascular conditioning programs

### **B. RELAXATION**

- Breathing strategies
  - Movement strategies
  - Relaxation techniques
  - C. Airway clearance techniques may include
    - Breathing strategies
  - Active cycle of breathing or forced expiratory techniques
  - Assisted cough/huff techniques
  - Paced breathing
  - Pursed lip breathing
  - Techniques to maximize ventilation (e.g., maximum inspiratory hold, breath stacking, manual hyperinflation)
  - Manual/mechanical techniques
    - Assistive devices.
    - Positioning
    - Positioning to alter work of breathing
    - Positioning to maximize ventilation and perfusion.
  - Functional training in self-care and home management may include
  - Functional training in work (job/school/play), community, and leisure integration or reintegration may include
- Activities of daily living (ADL) training
- Bed mobility and transfer training
  - Age appropriate functional skills
    - Barrier accommodations or modifications
    - Device and equipment use and training:
  - Assistive and adaptive device or equipment training during ADL (specifically for bed mobility and transfer training, gait and locomotion, and dressing)
  - Orthotic, protective, or supportive device or equipment training during self-care and home management
  - Prosthetic device or equipment training during ADL (specifically for bed mobility and transfer

- training, gait and locomotion, and dressing)
- Functional training programs
- Simulated environments and tasks
- Task adaptation
- Injury prevention or reduction
  - Safety awareness training during self-care management
  - Injury prevention education during self-care management
  - Injury prevention or reduction with use of equipment
- Prescription, application, and, as appropriate, fabrication of devices and equipment may include
  - Adaptive devices
  - Hospital beds
  - Raised toilet seats
  - Seating systems – prefabricated
  - Assistive devices
  - Canes
  - Crutches
  - Long-handled reachers
  - Static and dynamic splints – prefabricated
  - Walkers
  - Wheelchairs
  - Orthotic devices
  - Prefabricated braces
  - Prefabricated shoe inserts
  - Prefabricated splints.
  - Prosthetic devices (lower-extremity)
  - Protective devices
  - Braces
  - Cushions
  - Helmets
  - Protective taping
  - Supportive devices

### MECHANICAL MODALITIES

- Compression therapies (prefabricated)

- Prefabricated compression garments
- Corsets
- Elastic wraps
- Neck collars
- Slings
- Supplemental oxygen - apply and adjust
- Supportive taping
- Electrotherapeutic modalities may include
  - Biofeedback
  - Electrotherapeutic delivery of medications (eg, iontophoresis)
  - Electrical stimulation
  - Electrical muscle stimulation (EMS)
  - Functional electrical stimulation (FES)
  - High voltage pulsed current (HVPC)
  - Neuromuscular electrical stimulation (NMES)
  - Transcutaneous electrical nerve stimulation (TENS)
- Physical agents and mechanical modalities may include: *Physical agents*:
  - Cryotherapy
  - Cold packs
  - Ice massage
  - Vapocoolant spray
  - Hydrotherapy
  - Contrast bath
  - Pools
  - Whirlpool tanks
  - Sound agents
  - Phonophoresis
  - Ultrasound
  - Thermotherapy
  - Dry heat
    - Hot packs
    - Paraffin baths

- Compression garments



- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Skill Category Description of Minimum Skills</li><li>• Vasopneumatic compression devices</li><li>• Taping</li><li>• Compression bandaging (excluding lymphedema)</li><li>• Gravity-assisted compression devices</li><li>• Standing frame</li><li>• competency in SOAP notes format</li></ul> | <ul style="list-style-type: none"><li>• Tilt table</li><li>• Mechanical motion devices</li><li>• Continuous passive motion (CPM)<ul style="list-style-type: none"><li>▪ Traction devices</li></ul></li><li>• Intermittent</li><li>• Positional</li><li>• Sustained</li><li>• Documentation of all listed</li></ul> |
|--|--|

**Note**

It is mandatory for each student to document minimum 16 cases per semester (1 cases per week) in clinical log book duly checked and signed by clinical supervisor on weekly basis and head of institute at completion

**TENTH SEMESTER**

1. OBSTETRICS & GYNEACOLOGICAL PHYSICAL THERAPY
2. PAEDIATRIC PHYSICAL THERAPY
3. GERONTOLOGY & GERIATRIC PHYSICAL THERAPY
4. SPORTS PHYSICAL THERAPY
5. SUPERVISED CLINICAL PRACTICE - VI
6. RESEARCH PROJECT

**OBSTETRICS & GYNEACOLOGICAL PHYSICAL THERAPY CREDIT HOURS 2(2-0)**

**COURSE DESCRIPTION**

This course intends to provide Introduction to physical therapy practice for evaluation and treatment of pelvic floor dysfunction, pregnancy, osteoporosis, and other disorders specific to women. Topics will focus on medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

**LEARNING OBJECTIVES**

- Discuss common gynecological conditions relevant to physical Therapy
- Evaluate the women's health problems
- Discuss rehabilitation plan for gynecological patients.

**COURSE CONTENTS**

**MEDICAL TERMINOLOGY REGARDING GYNECOLOGY, OBSTETRICS AND WOMEN'S HEALTH**

- Anatomy
- Physiology of pregnancy
- Physical and physiological changes of labour and the puerperium

- The antenatal period
- Relieving the discomforts of pregnancy
- Preparation of labour
- Postnatal period
- The climacteric
- Common gynecological conditions
- Gynecological surgery
- Urinary function and dysfunction
- Bowel and anorectal function and dysfunction.

### **ONCOLOGICAL ISSUE WITH WOMEN'S HEALTH**

- Management of breast cancer
- Management of lymph odema.

### **SPECIAL TOPIC IN WOMEN'S HEALTH**

- Female athletes
- Exercise issues and aging
- Aquatic therapy services in women health
- Physical therapy management for women with long term physical disabilities.

### **CASE HISTORIES**

- Principles of assessment and outcome measures
- Documentation in SOAP notes format
- Evidence based obstetrics and gynecological Physical Therapy Treatment protocols.

### **RECOMMENDED BOOKS**

1. *Physiotherapy in Obstetrics and Gynecology* By: Jill Mantle, Jeanette Haslam, Sue Barton, 2<sup>nd</sup> edition.
2. *Textbook of Physiotherapy for Obstetric and Gynecological Conditions (Paperback)* By (author) G.B. Madhur.

## **PEDIATRIC PHYSICAL THERAPY CREDIT HOURS 2 (2-0)**

### **COURSE DESCRIPTION**

This course addresses both the medical and rehabilitation management of the pediatric patients using an interdisciplinary approach. The etiology and clinical features of common diseases/ disorders observed in the pediatric population will be emphasized. Students will participate in case studies and an interdisciplinary evaluation project.

### **LEARNING OBJECTIVES:**

- Discuss common Pediatric conditions relevant to physical Therapy
- Evaluate the pediatric problems
- Formulate effective rehabilitation plan for pediatric patients.

### **COURSE CONTENTS**

#### **MEDICAL TERMINOLOGY REGARDING PEDIATRICS**

- History and Examination / Pediatric Examination
- Assessment and outcome measurement
- Theories of Development
- Medical Care of Children with Disabilities
- Psychological Assessment in Pediatric Rehabilitation
- Approaches to working with children
- Normal Developmental Milestones
- Language Development in Disorders of Communication and Oral Motor Function Adaptive Sports and Recreation
- Orthotic and Assistive Devices
- Electro diagnosis in Pediatrics
- Motor Learning & Principles of Motor Learning
- The Child Parents and Physiotherapist
- Aging With Pediatric Onset Disability and Diseases
- The Assessment of Human Gait, Motion, and Motor Function
- Psychosocial Aspects of Pediatric Rehabilitation
- Pediatric and Neonatal Intensive Therapy
- Disorders of Respiratory System
- Cystic Fibrosis Duchene Muscular
- Hemophilia
- Lower Limb Deformities
- Orthopedics and Musculoskeletal Conditions
- Talipes Equinovarus
- Torticollis
- Pediatric Limb Deficiencies
- Neuromuscular Diseases
- Myopathies
- Traumatic Brain Injury
- Cerebral Palsy
- Spinal Cord Injuries
- Spina Bifida
- Oncology and palliative care.

### **CASE HISTORIES**

- Principles of assessment and outcome measures
- Documentation in SOAP notes format
- Evidence based pediatric Physical Therapy Treatment protocols

### **RECOMMENDED BOOKS**

1. *Physical Therapy for Children* By, Suzann K. Campbell, Robert J. Palisano & Darl W. Vander Linden.
2. *Paediatric Rehabilitation Principles and practice* (Fourth Edition) By, Michael A Alexander & Dennis j. Matthews.
3. *Additional reading material as assigned.*

### **GERONTOLOGY & GERIATRIC PHYSICAL THERAPY CREDIT HOURS 2 (2-0)**

#### **COURSE DESCRIPTION**

The course covers normal aging process, physiological and psychological changes and their effects on daily living activities (ADL) and instrumental daily living activities (IADL). Relevant tests and measures for determining impairment and differentiating the diagnosis based on the specificity and sensitivity of the assessment instruments as related to patients with geriatric conditions are discussed. The use of evidence-based physical therapy intervention for geriatric conditions is emphasized. Topics will focus on

medical terminology, clinical examination, evaluation, comparing contemporary, traditional interventions and the impact of evolving technology in this area.

### **LEARNING OBJECTIVES**

- Discuss common Geriatric conditions relevant to physical Therapy and get insight into the human development
- Evaluate the Geriatric problems
- Formulate effective rehabilitation plan for Geriatric patients.

### **COURSE CONTENTS**

#### **GERONTOLOGY**

- Introduction to Gerontology
- Demographic Trends of an Aging Society
- Social Gerontology
- The Physiology and Pathology of Aging
- The Cognitive and Psychological Changes Associated with Aging
- Functional Performance in Later Life: Basic Sensory, Perceptual, and Physical Changes Associated with Aging
- Geriatric Pharmacotherapy
- Sexuality and Aging
- Living Options and the Continuum of Care
- Legal and Financial Issues Related to Health Care for Older People
- Health Care Providers Working With Older Adults
- Future Concerns in an Aging Society
- Health Literacy and Clear Health Communication

#### **GERIATRIC PHYSICAL THERAPY**

#### **MEDICAL TERMINOLOGY REGARDING GERIATRICS ATTITUDES AND AGEISM**

- Ageism
- Myths and Facts about Older Adults
- Age Bias in Healthcare

- Geriatric Training and Role of Physical Therapist

#### **NORMAL PHYSICAL CHANGES IN OLDER ADULTS**

- Breathing — the Respiratory System
- Beating — the Cardiovascular System
- Thinking and Reacting — the Nervous System
- Moving — the Musculoskeletal System
- Eating & Eliminating — the Gastrointestinal and Urinary Systems
- Metabolizing — the Endocrine System
- Responding — the Sensory System
- Sleeping and Other Physical Changes

#### **PSYCHOLOGICAL CHANGES**

- The 3 Ds and Suicide in Older Adults
- Delirium
- Dementia
- Depression

#### **OLDER ADULT ABUSE AND NEGLECT**

- Scope of Older Adult Abuse and Neglect
- Clues to Abuse and Interventions

#### **TRIAGE AND ASSESSMENT**

- ABCs of Geriatric Assessment
- Assessment Techniques and Atypical Presentations

### **PAIN**

- Pain in Older Adults
- Pain Assessment and Challenges
- Impact of Physiological Changes
- Medication and Pain Management
- Medication Interactions
- Medication and Food

### **EFFECTS OF AGE**

- Task Complexity,
- Exercise
- Ambulation.

### **PHYSICAL THERAPY FOR GERIATRICS IN VARIOUS NEUROMUSCULAR DISORDERS**

- Alzheimer's disease
- Parkinsonism
- Cerebrovascular accident (C.V.A)
- Poly neuropathies etc.

### **PRE-OPERATIVE AND POST OPERATIVE PHYSICAL THERAPY FOR GERIATRICS IN VARIOUS MUSCULOSKELETAL DISORDERS**

- Hip & Knee Joint replacements
- Soft tissue injuries.

### **BALANCE AND FALL IN ELDERLY: ISSUES IN EVALUATION AND TREATMENT**

- Introduction
- Defining the problem of falls, risk factors, aging theory concept pertinent to falls in the elderly
- Multi-faceted approach to the falls problem
- Postural control theory, physiology of balance ,
- Summary influence of age on postural control, relationship between postural control and falls, A model, examination and evaluation, history, biological assessment, sensory effectors, strength, ROM, endurance, central processing, functional assessment, environmental assessment, psychosocial assessment, intervention

### **MEDICATIONS**

#### **NUTRITIONAL DEFICIENCIES**

- Primary nutritional problems, limited fixed incomes, severely limited food choices and availability.

#### **CASE HISTORIES**

- Principles of assessment and outcome measures.
- Documentation in SOAP notes format.
- Evidence based geriatric Physical Therapy Treatment protocols.

### **RECOMMENDED BOOKS**

1. *Geriatric Physical Therapy* by Andrew A. Guccione.
2. *Fundamentals of Geriatric Medicine.*
3. *Gerontology for health care professional* by regula H robbnet/ walter.
4. *Handbook of gerontology* by James A Blackburn and Catherine N Dulmus.

### **SPORTS PHYSICAL THERAPY CREDIT HOURS**

**2 (2-0)**

### **COURSE DESCRIPTION**

The main focus of this course is related to the understanding of the role that physical therapists play in both the industrial continuum and sports physical therapy. Emphasis is placed on acute management of traumatic injuries and/or sudden illness. In addition, injury prevention with an emphasis on the advanced clinical competencies related to the practice of sports physical therapy will also be covered.

### **LEARNING OBJECTIVES**

- Discuss common sports injuries and get insight into the mechanics and Pathomechanics of sports injuries
- Discuss responsibilities of sports physiotherapist
- Evaluate the sports injuries
- Formulate rehabilitation plan for sports injuries.

### **COURSE CONTENTS**

#### **MEDICAL TERMINOLOGY RELATED TO SPORTS PHYSICAL THERAPY**

#### **INTRODUCTION TO SPORTS REHABILITATION**

- Introduction to sport injury management.

#### **INJURY SCREENING AND ASSESSMENT OF PERFORMANCE**

- Injury prevention and screening
- Assessment and needs analysis.

#### **PATHOPHYSIOLOGY OF MUSCULOSKELETAL INJURIES**

- Pathophysiology of skeletal muscle injuries
- Pathophysiology of tendon injuries
- Pathophysiology of ligament injuries
- Pathophysiology of skeletal injuries
- Peripheral nerve injuries.

#### **EFFECTIVE CLINICAL DECISION MAKING**

- An introduction to periodisation
- Management of acute sport injury
- Musculoskeletal assessment
- Progressive systematic functional rehabilitation
- Strength and conditioning
- Nutritional considerations for performance and rehabilitation
- Psychology and sports rehabilitation
- Clinical reasoning.

#### **JOINT SPECIFIC SPORT INJURIES AND PATHOLOGIES**

- Shoulder injuries in sport
- The elbow
- Wrist and hand injuries in sport
- The groin in sport
- in sport.
- The knee
- Ankle complex injuries in sport
- The foot

**TRAVELING WITH A TEAM DRUGS AND THE ATHLETE ETHICS AND SPORTS MEDICINE CASE HISTORIES**

- Principles of assessment and outcome measures
- Documentation in SOAP notes format
- Evidence based sports Physical Therapy Treatment protocols.

**RECOMMENDED BOOKS**

1. *Sports Rehabilitation and Injury Prevention by: Paul Comfort & Earle Abrahamson, 1<sup>st</sup> Edition, 2010, Wiley Blackwell Publishers.*
2. *Clinical Sports Medicine by: Brukner & Khan, 4ed, McGraw-Hill Publishers.*
3. *A guide to sports and injury management by: Mike Bundy & Andy Leaver, 1<sup>st</sup> edition, 2010, Churchill Livingstone*

**SUPERVISED CLINICAL PRACTICE- V CREDIT HOURS 4 (0-4)**

| <b>SEMESTER</b> | <b>SUPERVISION</b>       | <b>FOCUS</b>                 | <b>WARDS</b>  | <b>COMPETEN</b> |
|-----------------|--------------------------|------------------------------|---|-----------------|
| 10              | Supervised by trained PT | Evaluation, Examination, and | Integumentary, gynecology & obstetrics, Geriatric, sports and metabolic disorders | Listed below    |

**COURSE DESCRIPTION**

During this supervised clinical practice, students are responsible for successful execution of examination, evaluation, and interventions relating to Integumentary, gynecology and obstetrics, sports and metabolic disorders. Students become familiar with performance of these skills in all settings (inpatient and outpatient) as well as on all types of conditions (surgical, nonsurgical, pediatric, geriatric, obstetrics & gynecology, sports etc.) Students learn to objectively perform these skills under the supervision of trained physical therapists. Student is required to keep a performance record of all listed competencies and successfully perform on real patients during the final evaluation of the course.

**CLINICAL COMPETENCIES**

**EXAMINATION**

- Based on best available evidence select examination tests and measures that are appropriate for the patient/client.
- Perform posture tests and measures of postural alignment and positioning.
- Perform gait, locomotion and balance tests including quantitative and qualitative measures such as;
  - Balance during functional activities with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment

- Balance (dynamic and static) with or without the use of assistive, adaptive, orthotic, protective, supportive, or prosthetic devices or equipment
- Gait and locomotion during functional activities with or without the
- use of assistive, adaptive, orthotic, protective, supportive, or
  - prosthetic devices or equipment to include:
  - Bed mobility
  - Transfers (level surfaces and floor)
  - Wheel chair management
  - Uneven surfaces
  - Safety during gait, locomotion, and balance
- Perform gait assessment including step length, speed, characteristics of gait, and abnormal gait patterns.
- Characterize or quantify body mechanics during self-care, home management, work, community, tasks, or leisure activities.
- Characterize or quantify ergonomic performance during work (job/school/play)
- Dexterity and coordination during work
- Safety in work environment
- Specific work conditions or activities
- Tools, devices, equipment, and workstations related to work actions, tasks, or activities
- Characterize or quantify environmental home and work (job/school/play) barriers:
- Current and potential barriers
- Physical space and environment
- Community access
- Observe self-care and home management (including ADL and IADL)
- Measure and characterize pain\* to include
  - Pain, soreness, and nociception
  - Specific body parts
  - Recognize and characterize signs and symptoms of inflammation.
- Perform integumentary integrity tests and measures including
- Activities, positioning, and postures that produce or relieve trauma to the skin.
- Assistive, adaptive, orthotic, protective, supportive, or prosthetic devices and equipment that may produce or relieve trauma to the skin.
- Skin characteristics, including blistering, continuity of skin color, dermatitis, hair growth, mobility, nail growth, sensation, temperature, texture and turgor.
- Activities, positioning, and postures that aggravate the wound or scar or that produce or relieve trauma.
- Signs of infection.
- Wound characteristics: bleeding, depth, drainage, location, odor, size, and color.
  - G. Wound scar tissue characteristics including banding, pliability, sensation, and texture.

## **EVALUATION**

- Clinical reasoning
- Clinical decision making
- Synthesize available data on a patient/client expressed in terms of

the International Classification of Function, Disability and Health (ICF) model to include body functions and structures, activities, and participation.



- Use available evidence in interpreting the examination findings.
- Verbalize possible alternatives when interpreting the examination findings.
- Cite the evidence (patient/client history, lab diagnostics, tests and measures and scientific literature) to support a clinical decision.

**DIAGNOSIS**

- Integrate the examination findings to classify the patient/client problem in terms of body functions and structures, and activities and participation (ie, practice patterns in the Guide)
- Identify and prioritize impairments in body functions and structures, and activity limitations and participation restrictions to determine specific body function and structure, and activities and participation towards which the intervention will be directed.

**PROGNOSIS**

- Determine the predicted level of optimal functioning and the amount of time required to achieve that level
- Recognize barriers that may impact the achievement of optimal functioning within a predicted time frame including
  - Age
  - Medication(s)
  - Socioeconomic status
  - Co-morbidities
  - Cognitive status
  - Nutrition
  - Social Support
  - Environment.

**Standard 2-1**

**The curriculum must be consistent and supports the program’s documented objectives.**

All the under graduate subjects are consistent with program documented objective

| Sr # | Courses/ Group of courses | OBJECTIVES |   |   |   |   |   |   |   |   |
|------|---------------------------|------------|---|---|---|---|---|---|---|---|
|      |                           | 1          | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1.   | Anatomy                   | X          |   |   |   |   |   |   |   |   |
| 2.   | Physiology                | X          |   |   |   |   |   |   |   |   |
| 3.   | Kinesiology               | X          |   |   |   |   |   |   |   |   |
| 4.   | Biochemistry              | X          |   |   |   |   |   |   |   |   |

|     |   |   |   |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|---|---|---|
| 5.  | Biomechanics & Ergonomics-I   | X |   |   |   |   |   |   |   |
| 6.  | Medical Physics,  | X |   |   |   |   |   |   |   |
| 7.  | Exercise Physiology,  | X |   |   |   |   |   |   |   |
| 8.  | Pharmacology,   | X |   |   |   |   |   |   |   |
| 9.  | Pathology   | X |   |   |   |   |   |   |   |
| 10. | Therapeutic Exercises & Techniques  | X |   |   |   |   |   |   | X |
| 11. | Physical Agents & Electrotherapy  | X |   |   |   |   |   |   |   |
| 12. | Community Medicine & Rehabilitation,  | X |   |   |   |   |   | X |   |
| 13. | Medicine-I,   | X |   |   |   |   |   |   |   |
| 14. | Surgery-I,  | X |   |   |   |   |   |   |   |
| 15. | Radiology & Diagnostic Imaging  | X |   |   |   |   |   |   |   |
| 16. | English   |   |   |   |   |   | X |   |   |
| 17. | Islamic Studies/ Ethics   |   |   |   |   | X |   | X |   |
| 18. | Sociology   |   |   |   |   | X |   |   |   |
| 19. | Health & Wellness   |   |   |   | X | X |   |   |   |
| 20. | Therapeutic Exercises & Techniques  |   | X |   |   |   |   |   | X |
| 21. | Behavioral Sciences (Psychology & Ethics)   | X |   |   |   |   |   | X |   |
| 22. | Health Education and Teaching Methodology   |   |   |   | X | X | X | X | X |
| 23. | Evidence Based Practice   |   |   | X | X | X |   | X |   |
| 24. | Scientific Inquiry & Research Methodology   |   |   | X |   | X |   |   |   |
| 25. | Clinical Decision Making & Differential Diagnosis   |   |   |   |   | X |   |   |   |
| 26. | Prosthetics & Orthotics   |   |   | X |   |   |   |   |   |
| 27. | Professional Practice   |   |   |   | X | X | X | X | X |
| 28. | Emergency Procedures & Primary Care in Physical Therapy, Neurological Physical Therapy, Musculoskeletal Physical Therapy, Cardiopulmonary Physical Therapy, Manual Therapy, Integumentary Physical Therapy, Gynecology & Obstetrics Physical Therapy, Pediatric Physical Therapy, Gerontology & |   | X |   |   |   |   |   | X |

|     |   |  |  |  |  |  |  |   |  |   |
|-----|---|--|--|--|--|--|--|---|--|---|
|     | Geriatric Physical Therapy, Sports Physical Therapy   |  |  |  |  |  |  |   |  |   |
| 29. | Supervised Clinical Practice-I, Supervised Clinical Practice-II, Supervised Clinical Practice-III, Supervised Clinical Practice-IV, Supervised Clinical Practice-V, Supervised Clinical Practice-VI |  |  |  |  |  |  | X |  | X |

**Standard 2-2**

**Theoretical backgrounds, problem analysis and solution design must be stressed within the program’s core material.**

As this is the under graduate program all the subjects are stressed with problem analysis and solution design.

| <b>Elements</b>          | <b>Courses</b>   |
|--------------------------|--|
| <b>Basic Sciences</b>    | Anatomy, Physiology, Kinesiology, Medical Physics, Biomechanics & Ergonomics-I, Biochemistry I, Exercise Physiology , Molecular Biology & Genetics, Pathology & Microbiology I, Pharmacology & Therapeutics I, Physical Agents & Electrotherapy I, Biostatistics I, Behavioral Sciences Medicine I, Surgery I, , Professional Practice . |
| <b>Clinical Sciences</b> | Health & Wellness, Therapeutic Exercises & Techniques, Community Medicine & Rehabilitation, Radiology & Diagnostic Imaging, Evidence Based Practice, Scientific Inquiry & Research Methodology, And Clinical Decision Making & Differential Diagnosis.   |
|                          | Supervised Clinical Practice I, Supervised Clinical Practice II, Supervised Clinical Practice III, Supervised Clinical Practice IV, Supervised Clinical Practice V, Musculoskeletal Physical Therapy,  |

|  |  |
|--|--|
|  | Neurological Physical Therapy, Emergency Procedures & Primary Care In Physical Therapy, Cardiopulmonary Physical Therapy, Prosthetics & Orthotics, Manual Therapy, Integumentary Physical Therapy, Obstetrics & Gynecological Physical Therapy, Pediatric Physical Therapy, Gerontology & Geriatric Physical Therapy, Sports Physical Therapy, Research Project. |
|--|--|

**Standard 2-3**

**The Curriculum must satisfy the core requirements for the program as specified by the respective accreditation body.**

|   |         |
|---|---------|
| Kinesiology I   | DPKI113 |
| Kinesiology II  | DPKI123 |
| Exercise Physiology                                     | DPEP243 |
| Biomechanics & Ergonomics-I                             | DPBE213 |
| Biomechanics & Ergonomics-II                            | DPBE223 |
| Medical Physics   | DMPP213 |
| Therapeutic Exercises & Techniques                      | DPTE313 |
| Physical Agents & Electrotherapy-I                      | DPPE313 |
| Physical Agents & Electrotherapy-II                     | DPPE323 |
| Health & Wellness                                       | DPHW212 |
| Community Medicine & Rehabilitation                     | DPCM313 |
| Musculoskeletal Physical Therapy                        | DPMU414 |
| Evidence Based Practice                                 | DPEB413 |
| Supervised Clinical Practice-III                        | DPCP432 |
| Neurological Physical Therapy                           | DPNE414 |
| Scientific Inquiry & Research Methodology               | DPSI413 |
| Emergency Procedures & Primary Care in Physical Therapy | DPEP413 |
| Cardiopulmonary Physical Therapy                        | DPCA513 |
| Gynecology & Obstetrics Physical Therapy                | DPGO512 |
| Paediatric Physical Therapy                             | DPPA512 |
| Gerontology & Geriatric Physical Therapy                | DPGE512 |
| Sports Physical Therapy                                 | DPSP512 |
| Manual Therapy  | DPMT513 |
| Clinical Decision Making & Differential Diagnosis       | DPCD513 |
| Prosthetics & Orthotics                                 | DPPO513 |
| Professional Practice                                   | DPPP512 |
| Integumentary Physical Therapy                          | DPIN512 |
| Supervised Clinical Practice-III                        | DPCP432 |
| Supervised Clinical Practice-IV                         | DPCP442 |

|                                |         |
|--------------------------------|---------|
| Supervised Clinical Practice-V | DPCP552 |
| Research Project               | DPRP516 |

**Standard 2-4**

**The curriculum must satisfy the major requirements for the program as specified by the respective accreditation body.**

|   |         |
|---|---------|
| Anatomy I                                 | DPAN114 |
| Anatomy II                                | DPAN124 |
| Anatomy III                               | DPAN233 |
| Anatomy IV                                | DPAN243 |
| Physiology-I                              | DPPH113 |
| Physiology-II                             | DPPH123 |
| Physiology-III                            | DPPH233 |
| Biochemistry-I                            | DPBG212 |
| Biochemistry-II                           | DPBG223 |
| Pharmacology-I                            | DPPR312 |
| Pharmacology-II                           | DPPR322 |
| Pathology & Microbiology-I                | DPPM312 |
| Pathology & Microbiology-II               | DPPM323 |
| Behavioral Sciences (Psychology & Ethics) | DPBS312 |
| Medicine-I                                | DPME413 |
| Medicine-II                               | DOME423 |
| Surgery-I                                 | DPSU413 |
| Surgery-II                                | DPSU423 |
| Radiology & Diagnostic Imaging            | DPRD413 |

**Standard 2-5**

**The curriculum must satisfy general education, arts and professional and other discipline requirements for the program as specified by the respective accreditation body.**

| <b>Subject</b>          | <b>Course Number</b> |
|-------------------------|----------------------|
| English I               | DPEN113              |
| English II              | DPEN123              |
| English III             | DPRN233              |
| Sociology               | DPSO112              |
| Intro to computer       | DPCO113              |
| Islamic Studies/ Ethics | DPSS112              |

**Standard 2-6**

**Information technology component of the curriculum must be integrated throughout the program**

The following Subjects contain Medical Informatics in a program are given below.

| <b>Subject</b>           | <b>Credit Hours</b> |
|--------------------------|---------------------|
| EVIDENCE BASED PRACTICE  | 3(2-1)              |
| INTRODUCTION TO COMPUTER | 3(2-1)              |
| RESEARCH PROJECT         | 6                   |

**Standard 2-7**

**Oral and written communication skills of the student must be developed and applied in the program.**

Below mentioned are the courses that help students in enhancing their oral and written communication skills.

- English I, II, III
- Health Education and Teaching Methodology.
- Supervised Clinical practices V, VI, VII, VIII, IX and X.

These are applied as; Project making, letter and application writing, portfolio making, creative writing, resume and CV writing, Patient case documentation, SOAP notes Documentation, Physical therapy techniques, implementation and documentation, better communication skills with the patients and their attendants.

### Criterion 3: Laboratories and Computing Facilities

FUIRS has established skill labs for under-Graduating students in Physical Therapy Department to practice their learning outcomes. Following is the list of available equipment.

#### LABORATORY

#### DETAIL OF MULTIDISCIPLINARY LAB EQUIPMENT (FUIRS)

| S.No | L/P           | Nomenclature                               | A/U | Qty |
|------|---------------|--|-----|-----|
| 1    | F-1 (33)      | Exhaust Fan                                | No  | 03  |
| 2    | F-2 (16)      | Stool Revolving s/S                        | No  | 34  |
| 3    | F-2 (19)      | Chair Revolving A type                     | No  | 01  |
| 4    | F-2 (22)      | Work Station with glass partition          | No  | 03  |
| 5    | F-2 (29)      | Steel Cabinet 4 Drawaz                     | No  | 01  |
| 6    | F-2 (35)      | Computer Table                             | No  | 03  |
| 7    | F-3 (1)       | Digital Regulated supply yasin Ps-1502     | No  | 10  |
| 8    | F-3 (2)       | Digital Multimerer DT-830                  | No  | 10  |
| 9    | FUIRS-03 (03) | Transister trainer Kit NPN/PNP local made  | No  | 02  |
| 10   | FUIRS-03 (04) | Semiconductor Diode trainer kit local made | No  | 02  |
| 11   | FUIRS-03 (05) | Capacitors trainer kits                    | No  | 02  |
| 12   | FUIRS-03 (06) | Bar magnets China                          | No  | 10  |
| 13   | FUIRS-03 (07) | Horseshoes Magnets China                   | No  | 10  |
| 14   | FUIRS-03 (08) | Dynamotor Board                            | No  | 10  |
| 15   | FUIRS-03 (09) | Screw Gauge meter China                    | No  | 06  |
| 16   | FUIRS-03 (10) | VerinerCalipers China                      | No  | 06  |
| 17   | FUIRS-03 (11) | Tanning Forks (Local Made)                 | No  | 01  |
| 18   | FUIRS-03 (12) | Meter Scale)                               | No  | 06  |
| 19   | FUIRS-03 (13) | Bread Board Projector Board)               | No  | 10  |
| 20   | FUIRS-03 (14) | Wooden Boards                              | No  | 10  |
| 21   | FUIRS-03 (15) | One Tube Phototherapy Light                | No  | 02  |
| 22   | FUIRS-03 (16) | IR Lamp                                    | No  | 02  |

|    |               |   |    |    |
|----|---------------|---|----|----|
| 23 | FUIRS-03 (17) | Hooks Law Set Local Made (150 MM helical spring)  | No | 10 |
| 24 | FUIRS-03 (18) | Simple Pendulum Set local made  | No | 10 |
| 25 | FUIRS-03 (19) | Sonometer Equipment Local made)   | No | 05 |
| 26 | FUIRS-03 (20) | Oscilloscope CA 8005 5 mhz (Local made)   | No | 02 |
| 27 | FUIRS-03 (21) | Prism (Local Made)  | No | 10 |
| 28 | FUIRS-03 (22) | Resistance Box (Large & small) local made   | No | 05 |
| 29 | FUIRS-03 (24) | Goniometer local made   | No | 15 |
| 30 | FUIRS-03 (25) | Thera Band Roll of 5.5 mtr  | No | 05 |
| 31 | FUIRS-03 (28) | Mats China Made   | No | 04 |
| 32 | FUIRS-03 (31) | Gym Ball China  | No | 01 |
| 33 | FUIRS-03 (33) | Wedge Set of 3 (Local Made)   | No | 01 |
| 34 |               | Digital therapy machine   | No | 01 |
| 35 | FUIRS-03 (38) | Skelton Simulation China  | No | 02 |
| 36 | FUIRS-03 (39) | Joint Structure China   | No | 06 |
| 37 | FUIRS-03 (40) | Examination Coach   | No | 02 |
| 38 | FUIRS-03 (43) | Charts (Misc)   | No | 05 |
| 39 | FUIRS-03 (44) | Pulse Oximeter  | No | 01 |
| 40 | FUIRS-03 (45) | Electrical Heating Pad Model BE-220 Basmit Taiwan   | No | 02 |
| 41 | FUIRS-03 (46) | Reflex Hammer Pak Made (ist quality)  | No | 15 |
| 42 | FUIRS-03 (47) | X-Ray View Box (Luminator 3 x rays  | No | 01 |
| 43 | FUIRS-03 (48) | The Extremity Mobilization strap (Optp USA)   | No | 02 |
| 44 | FUIRS-03 (49) | Double Header Disarticulated Skelton with compartmented case Model-1000206 Scientific Germany | No | 02 |
| 45 | FUIRS-03 (51) | 9 part Full size muscle Anatomy of the lower extremity cat No. 1000351)                       | No | 01 |
| 46 | FUIRS-03 (53) | Deluxe Muscle Arm Model M211 (Frlerzimmer Germany)  | No | 01 |
| 47 | FUIRS-03 (54) | Combo machine   | No | 01 |
| 48 | FUCD          | Bracket Fan   | No | 04 |
| 49 | F-2 (27)_     | Study Chair Blue  | No | 02 |
| 50 | F-1 (21)      | Almirah Steel 6x4 with glass door   | No | 01 |



|    |          |  |    |    |
|----|----------|--|----|----|
| 51 | F-2 (40) | Wooden cup board 7x4 with 12mm glass<br>shelve | No | 05 |
| 52 | F-1 (7)  | Extension Board (with combo machine)           | No | 01 |
| 53 | FUMC-20  | Dust Bin                                       | No | 01 |
| 54 | F-2 )28) | Chair revolving low back                       | No | 01 |

### DETAIL OF LABORATORY EQUIPMENT (Biochemistry)

|                                     |  |            |
|-------------------------------------|--|------------|
| <b>Laboratory Title</b>             | <b>Lab I</b>   |            |
| <b>Location &amp; Area</b>          | FUMC Floor 1 <sup>st</sup> floor   |            |
| <b>Objectives</b>                   | <ul style="list-style-type: none"> <li>• Used for conduction of experiments SGDs and PBLs</li> <li>• Used for the sitting purpose of Lab Staff and Demonstrators.</li> <li>• For storage of Chemicals, Apparatus and Equipment's.</li> </ul> |            |
| <b>Adequacy for Instruction</b>     | Yes  |            |
| <b>Courses Taught</b>               | DPT  |            |
| <b>Software Available</b>           | None   |            |
| <b>Major Apparatus / Equipments</b> | <b>Name of Equipment's</b>   | <b>Qty</b> |
|                                     | 1. Scissors Sharp  | 04         |
|                                     | 2. Tray Steel (14"x12")  | 02         |
|                                     | 3. Beaker 100 ML   | 44         |
|                                     | 4. Rubber Sucker Germany   | 12         |
|                                     | 5. Stop Watch  | 01         |
|                                     | 6. Micro Pipette 10-100 ul   | 03         |
|                                     | 7. Micro Pipette 100-1000 ul   | 07         |
|                                     | 8. Test Tubes Rack   | 45         |
|                                     | 9. Incubator Memmert Germany   | 01         |
|                                     | 10. Vacuum Decilrator  | 02         |
|                                     | 11. Presion Top Loading Japan  | 01         |
|                                     | 12. Test Tube Holders  | 22         |
|                                     | 13. Cylinder 50 ml   | 18         |
|                                     | 14. Cylinder 100 ml  | 13         |
|                                     | 15. Water Distillator  | 1          |
|                                     | 16. Tripod Stand   | 24         |
|                                     | 17. China Dish 100 cc  | 36         |
|                                     | 18. Conical Flask 250 ml   | 48         |
|                                     | 19. Conical Flask 100 ml   | 48         |
|                                     | 20. Forceps  | 12         |
|                                     | 21. Balance Machine One top Loading & One Analytical Elect   | 01         |
|                                     | 22. Burette 50 ml  | 27         |
|                                     | 23. Burette Stand  | 20         |
| 24. Flask 100 ml measuring          | 48   |            |

|   |    |
|---|----|
| 25. Flask 250 ml measuring  | 48 |
| 26. Flask 50 ml   | 50 |
| 27. Funnel Stand  | 20 |
| 28. Funnel  | 26 |
| 29. PH Meter  | 02 |
| 30. Micro Scope Binocular<br>(21718,21743,21744,21746,21748)  | 05 |
| 31. Centrifuge Machine (Z200A)  | 01 |
| 32. Centrifuge Machine (Z206A)  | 01 |
| 33. Beaker 50 ml  | 41 |
| 34. Beaker 250 ml   | 0  |
| 35. Beaker 1 Lit (1000 ML) China  | 0  |
| 36. Distillation Plant 5 Lit China  | 01 |
| 37. Hot Air Blower  | 01 |
| 38. Tip Holder Stand Large  | 01 |
| 39. Tip Holder Stand Small  | 01 |
| 40. Micro Pippette 01 to 10 ul  | 02 |
| 41. Glass Bottle 60 ml  | 05 |
| 42. Hot Plate/Stirrer 15 lit Stuart Biby England  | 01 |
| 43. PH Meter with 2 dl glass/electrodes/probes  | 01 |
| 44. Micropipette Fixed Volume 20 ul Imported (Jencons England)  | 02 |
| 45. Analytical Balance (Sartorius Germany) Model-BL-210S  | 01 |
| 46. Analytical Balance (Sartorius Germany) Model-313 SS DS 001g-310 gm  | 01 |
| 47. Water Bath 04 Hole China  | 02 |
| 48. Gel Documentation System with soft ware Cat No.UVDI-254/365 Compact Digimade System (S No G15-130425011) with 10.0 Megapixels digital camera (S. No.508140007217)and built in 254 & 365 mm UV Trans illuminator Complete System (Major Science USA) | 01 |
| 49. Midi Plus-2 Horizontal Gel Electrophoresis System Cat No WE-15-7-10-15 (S No.ME-140320126) along with Power Supply Cat No MP-300V ( S No.140310A035) (Major Science USA)  | 01 |
| 50. Cylinder 1000 ml  | 02 |
| 51. Cylinder 500 ml   | 05 |
| 52. Micro Lab 300 (Built in Printer) (Semi Automated Chemistry Analyzer)  | 01 |
| 53. Chromatography Jar Small  | 09 |
| 54. Water Bath Model:WCB-11(Korea)  | 01 |
| 55. Accu Chek Active Blood Glucose Monitoring (Glucometer)  | 02 |
| 56. Centrifuge Machine Model EBA-20 Hettich Germany   | 01 |
| 57. Electrophoresis Heresis System  | 01 |

|                          |   |    |
|--------------------------|---|----|
|                          | 58. PH Meter 3505 Janway (Japan)  | 01 |
|                          | 59. Refractometer Digital SG/Protein Model:PA-202   | 01 |
|                          | 60. Spectrophotometer Model VIS-1100 (BMS Canada)   | 01 |
|                          | 61. Spectrophotometer Model UV-1900 (BMS Canada)  | 01 |
|                          | 62. Urine S.G.Refractometer Uric Con NE-Cat No.2734 (Atago) Japan   | 02 |
|                          | 63. Micropipette Fix Volume 200 ul (JENCONS, England)   | 02 |
|                          | 64. Micropipette Fix Volume 50 ul (JENCONS, England)  | 02 |
|                          | 65. Burner Sui Gas Best Quality (Local)   | 25 |
|                          | 66. Stop Watch (Q&Q) China  | 06 |
|                          | 67. Canola 2 Ways (Stop Cock) Steel for sui gas Heavy Duty (Local)  | 24 |
|                          | 68. Incubator Gravity/Natural Type Digital Fuzzy Control Model: WIG-155 (Witeg Germany) Ser No.0400674112F02  | 01 |
|                          | 69. Hot Air Oven Model: WON-32, Ovens Gravity/Natural Flow Type with Digital Fuzzy Control System & Superior Temperature Accuracy (Witeg Germany)   | 01 |
| <b>Safety Regulation</b> | <ul style="list-style-type: none"> <li>• Inside the lab: None (No emergency exit, No first-aid box etc)</li> <li>• Outside the Lab: Fire extinguisher (within due date). Staff is not trained to use it.</li> </ul> |    |

**DETAIL OF LABORATORY EQUIPMENT (Pharmacology)**

|                                    |   |               |
|------------------------------------|---|---------------|
| <b>Laboratory Title</b>            | <b>Lab I</b>  | <b>Lab II</b> |
| <b>Location &amp; Area</b>         | FUMC 3 <sup>rd</sup> floor  | None          |
| <b>Objectives</b>                  | <ul style="list-style-type: none"> <li>• Used for conduction of experiments</li> <li>• SGDs and PBLs</li> </ul> | ----          |
| <b>Adequacy for Instruction</b>    | Proper understanding of Instruments & drugs used  | ----          |
| <b>Courses Taught</b>              | DPT   | ----          |
| <b>Software Available</b>          | None  | ----          |
| <b>Major Apparatus / Equipment</b> | <b>Name of Equipment's</b>  | <b>Qty</b>    |
|                                    | 1. Hammer   | 5             |
|                                    | 2. Cages Rabbits Small  | 20            |
|                                    | 3. Specimen Jar Plastic 5 mm  | 2             |
|                                    | 4. Tray Kidney S/S  | 12            |
|                                    | 5. Beaker 100 ML  | 88            |
|                                    | 6. Glass Rod (Hollow Blowing)   | 24            |

|  |     |
|--|-----|
| 7. Stethoscope Deluxe Dual Head (Heart Plus)                                 | 10  |
| 8. Stop Watch  | 0   |
| 9. Thermometer Clinical  | 9   |
| 10. Conical Flask 250 ml china   | 6   |
| 11. Student Single Tissue Bath   | 17  |
| 12. Conical Flask 1000 ml  | 2   |
| 13. Student Kymograph Complete with Accessories                              | 22  |
| 14. Burette 50 ML  | 9   |
| 15. Burette Stand  | 8   |
| 16. O2 Flow Meter with Gauge   | 27  |
| 17. O2 Oxygen Cylinder Key   | 19  |
| 18. O2 Cylinder (Attested from BOC)  | 27  |
| 19. Oxygen Cylinder Trolley  | 27  |
| 20. Binocular Educational Microscope Model: CxLLabomed USA Ser No. 110647140 | 01  |
| 21. Cutting Needle Surgical Curved   | 04  |
| 22. Bottle wide Mouth 250 ml   | 3   |
| 23. Scissors Fine  | 47  |
| 24. Bottle with Stopper Narrow Mouth   | 50  |
| 25. Graduated Cylinder 10 ml   | 47  |
| 26. Bottle Cleaning Brush  | 20  |
| 27. Graduated Cylinder 25 ML   | 48  |
| 28. Beaker 250 ml  | 80  |
| 29. Pestle and Mortar  | 04  |
| 30. Spatula Metal  | 04  |
| 31. Beaker 1000 ml   | 01  |
| 32. Physical Balance China   | 01  |
| 33. Beaker 500 ml  | 52  |
| 34. Graduated Cylinder 100 ML  | 02  |
| 35. Scale Steel 6"/12"   | 40  |
| 36. Diamond Key Wrench   | 02  |
| 37. Digital Balance 200 Gm   | 01  |
| 38. Scalpel  | 17  |
| 39. Distillation Plant Steel   | 01  |
| 40. Plain Forceps 5"   | 100 |
| 41. Tissue Forceps 5"  | 12  |
| 42. Curved Scissor 6"  | 100 |
| 43. Scissors Straight Pointed 5"   | 100 |
| 44. BP Apparatus Mercury Desk Model "Focal" FCO-110 (Focal Japan)            | 10  |

|                          |   |    |
|--------------------------|---|----|
|                          | 45. Instrument Tray S/S 14"x12"   | 08 |
|                          | 46. Bone Cutter   | 06 |
|                          | 47. Water Distillation Apparatus All Glasses Mod W-4000, J. Bibby England cap 4 lit/hrs comp.   | 01 |
|                          | 48. Digital Balance HL-100 Korea cap 10 mg to 100 mg  | 1  |
|                          | 49. Torches (china)   | 13 |
|                          | 50. ECG Machine Biocare Model: 101G(China)  | 1  |
|                          | 51. Water Bath 4 Hole China   | 2  |
|                          | 52. Pith Needle   | 40 |
|                          | 53. China Dish  | 10 |
|                          | 54. Pipette 10 ML   | 2  |
|                          | 55. Digital Balance 0.1 gm to 600 gm A&G  | 1  |
|                          | 56. Stop Watch (Q&Q) Japan/China  | 5  |
|                          | 57. Experimental Body Model: XC-401B-1(China)   | 3  |
|                          | 58. Complete Package of Power Lab, Ultimate teaching System Model: PTB-4264, AD Instruments, Australia includes the fol:-<br>a. PTB-4154 Power lab-1<br>b. Tissue Organ Bath Model: ML-1110-2<br>c. High Grade Isotonic transducer Model: MLT0015-1<br>d. Bridge Amp, Model: FE221-1<br>e. Computer with LCD 18.5"-2<br>f. HP Laser Jet Printer B&W-2 | 01 |
|                          | 59. Wheel Chair   | 1  |
|                          | 60. Stretcher Canvas  | 1  |
|                          | 61. First Aid Box   | 1  |
|                          | 62. Nebulizer System Model Family Compressor (Made in Italy)  | 1  |
| <b>Safety Regulation</b> | <ul style="list-style-type: none"> <li>• First-aid box</li> <li>• Safety gloves</li> <li>• Annexure I</li> </ul>  |    |

#### DETAIL OF LABORATORY EQUIPMENT (Pathology)

|                                 |  |            |
|---------------------------------|--|------------|
| <b>Laboratory Title</b>         | <b>Lab I (Main Pathology Lab)</b>  |            |
| <b>Location &amp; Area</b>      | FUMC 2 <sup>nd</sup> floor   |            |
| <b>Objectives</b>               | Imparting practical training in Pathology.<br>Imparting practical training for microscopy only   |            |
| <b>Adequacy for Instruction</b> | Yes  |            |
| <b>Courses Taught</b>           | Practical in path 1 <sup>st</sup> year, 2 <sup>nd</sup> year, 3 <sup>rd</sup> year & 4 <sup>th</sup> year MBBS<br>Practical training in microscopy<br>1st Year, 2nd year, 3rd year & 4th year MBBS |            |
| <b>Software Available</b>       | Available for microscopy only  |            |
|                                 | <b>Name of Equipment's</b>   | <b>Qty</b> |

**Major Apparatus /  
Equipment**

|   |         |
|---|---------|
| 1. Scissors Sharp   | 3       |
| 2. Stop Watch   | 2       |
| 3. Micro Pipette 10-100 ul  | 2       |
| 4. Slide Box Wooden   | 38      |
| 5. Micro Pipette 100-1000 ML  | 01      |
| 6. Test Tube Rack   | 01      |
| 7. Cylinder 50 MI   | 01      |
| 8. Forceps  | 04      |
| 9. Flask 1000 ml measuring  | 01      |
| 10. Conical Flask 500 ml  | 02      |
| 11. Microscope Binocular Model CX-21 Olympus Japan (Ser No.7C09758)   | 34      |
| 12. Magnifying Glass  | 01      |
| 13. Cylinder 1000 ml China  | 01      |
| 14. Cylinder 10 ml China  | 01      |
| 15. Petri Dishes 4"   | 12      |
| 16. Stirrer Glass   | 06      |
| 17. Wash Bottle   | 16      |
| 18. Jar 8x6x4   | 14<br>2 |
| 19. Micro :Pipette 01-05 ul   | 01      |
| 20. System Microscope with Multiviewing all for 5 person Comp with accessories Mod: BX-41   | 01      |
| 21. Slide Staining Rack   | 12      |
| 22. Slide Cabinet (capacity upto 2000 slides)   | 01      |
| 23. Glucometer  | 01      |
| 24. Trinocular Head Microscope Model CXR-3, LabomedLabo America INC, USA (Ser No.070114558)   | 01      |
| 25. CCTV Camera Module Taiwan make with attachment with 21" Colour Monitor Flat Screen (Sony) (Ser No. P030801109)                  | 01      |
| 26. Digital Camera Model e-Cam LabomedLabo America INC, USA.  | 01      |
| 27. Centrifuge Machine 12 x 15 ml 6000 PRM (Hermle Germany)   | 01      |
| 28. Autoclave Medium 60 Liter Digital Autoclave Verticle Model K-AC60 (Korea)   | 01      |
| 29. Variable Speed Micro Centrifuge Machine Model: E22B2 (Centurion Scientific UK)  | 01      |
| 30. Spectrophotometer Model: UV-1900 with analysis Software (Ser No. 00120575) Manufacturer Biotechnology Medical Services K.Canada | 01      |
| 31. TrinocularEdn Microscope Model: CXL-Labomed (Part No.9135003) (Ser No.080726208)  | 01      |
| 32. PH Meter Bench Top Hanna Model-210 Germany  | 01      |
| 33. Precision Balance Model: ARC-120 (OHAUS) USA  | 01      |

|                           |   |    |
|---------------------------|---|----|
|                           | 34. X-Ray Viewer Box (Single)   | 01 |
|                           | 35. Digital Incubator Model: K-D181 (K&K Korea)   | 01 |
|                           | 36. Hot Air Oven (Forced Convection) Model: K-C081 (K&K Korea)  | 01 |
|                           | 37. Automatic Disk Dispenser (90mm) for 8 Cartridge (OXIDE, UK)   | 01 |
|                           | 38. Micropipette Adjustable 0.5 ul to 10 ul (Extrogene, USA)  | 01 |
|                           | 39. Micropipette Adjustable 20 ul to 200 ul (Extrogene, USA)  | 01 |
|                           | 40. Mercurial Sphygmomanometer, Automatic Mercurial Stand Model Sphygmomanometer (YAMASU Japan)   | 01 |
|                           | 41. Biological Microscope XSZ-107B China  | 01 |
|                           | 42. Biological Microscope Model:107BN China   | 01 |
|                           | 43. GTI Green PCR Reader with Application Software SCIE-Plas Portable (Local Made)  | 01 |
|                           | 44. GTI-Protein Electrophoresis Tank  | 01 |
|                           | 45. GTI-Mini Page Tank  | 01 |
|                           | 46. GTI-250 DC Power Supply   | 01 |
|                           | 47. GTI-16 DNA Thermal Cycler   | 02 |
|                           | 48. GTI-8 Micro Centrifuge  | 05 |
|                           | 49. GTI-32 Dry Bath   | 05 |
|                           | 50. Dual Head Binocular Microscope Model: Leica DM 500 with accessories: Immersion Oil 10ml (Leica Germany/China)(Ser No.C-540202932 & 418198/11622020) | 01 |
| <b>Safety Regulations</b> | <b>Safety instruction present Annexure I</b>  |    |

### Standard 3-1

**Laboratory manuals/documentation/instructions for experiments must be available and easily accessible to faculty and students.**

Laboratory In-charge is the custodian of all the manuals and instructions concerning his laboratory. Its copies are also available with the Program Coordinator to be used by the faculty and students. These manuals and instructions are issued to desired entity through a defined process and proper record is maintained. The laboratory in-charge keeps the manuals and instructions in laboratory for immediate access to students and faculty members during the laboratory work.

### Standard 3-2

**There must be support personal for instruction and maintaining the laboratories.**

Each laboratory is authorized two staff members, Laboratory In-Charge and Laboratory Attendant. Laboratory in-charge is responsible for overall maintenance of laboratory and

also maintains the manuals and instructions while laboratory Attendant is responsible to maintain the laboratory equipment and general duties within the lab.

**Standard 3-3**

**The University computing infrastructure and facilities must be adequate to support program's objectives.**

The computer facilities are available to the students and faculty. Every teacher has access to computer and internet during and after working hours. Similarly students have 6 terminals to their disposal in the library where they have access to internet and computing facilities. 20 terminals are available to students in IT lab.

FUIRS is running a comprehensive Campus Management System. It facilitates the faculty members in maintaining the attendance record, examination schedules, time tables and student's data.

**Criterion 4: Student Support and Advising**

FUIRS program, since year 2014, started on schedule. The teachers and students in FUIRS have facility of interaction, even after classes, for any professional and academic advice. This fact is also highlighted by the students in the feedback on Performance number 10, taken by the Quality Enhancement Cell (QEC).

**Standard 4-1**

**Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.**

The department offers courses (core and humanities) as per requirements of the program. The required and elective courses are offered in a logical sequence to groom the students to obtain the program's defined objectives and outcomes. The courses offered outside the department belong to Faculty of medical Sciences and Faculty of Social Sciences. The DPT program in charge with the respective resource person in both the faculties and accommodates the desired courses in program's time table. This is done well in advance, prior to the commencement of classes to avoid any clashes in the schedule.



**Standard 4-2**

**Courses in the major area of study must be structured to ensure effective interaction between students, faculty and teaching assistants.**

All courses in the program are taught by the single faculty member. Courses are structured in the board of studies, before, commencement of each academic year. Faculty members carry out frequent interaction with students. Students are encouraged to give feedback and their views, about syllabi during and after the classes.

**Standard 4-3**

**Guidance on how to complete the program must be available to all students and access to academic advising must be available to make course decisions and career choices.**

Students are briefed about the program contents at the start of the session during orientation week by Associate Dean Academics. He maintains a list of guidance points provided to students during the whole duration of the program. Guidance points are evaluated at the end of the program to have necessary improvements.

Faculty endeavors to give professional counseling to students when needed. Students can get in touch directly with him/her for any advice/guidance.

## **Criterion 5: Process Control**

### **Standard 5-1**

**The process by which students are admitted to the program must be based on quantitative and qualitative criteria and clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives.**

Admissions are made twice a year, fall and spring. The program has a well-defined admission criterion that includes evaluation of student's marks at different levels and admission test results.

Students with 55% marks in HSSC (Pre Medical) or equivalent are eligible to appear in the admission test of the program. Students who pass the entrance test are called for interview. Admission is granted strictly on the basis of academic record, admission test and interview performance.

Inter medical college/university transfers are also allowed. Students from accredited universities are eligible to transfer their credits to FUIRS. Students have to submit complete course curriculum and internal evaluation certificate of each subject from his/her previous institution duly signed by head of department/Principal. Student's requests in this regard are dealt on case to case basis. Such requests are discussed in migration committee. Chairman migration committee is final deciding authority.

The admission criterion is evaluated every 1years by the board of faculties and academic council and Dean's committee in the light of instructions issued by HEC. Minor adjustments regarding admission test results weightages or test contents are made within university.

### **Standard 5-2**

**The process by which students are registered in the program and monitoring of students' progress to ensure timely completion of the program must be documented. This process must be periodically evaluated to ensure that it is meeting its objectives.**

The selected students are registered by Registrar office and registration numbers are issued.

At the end of each semester students are evaluated through assignments, sessional/mid-term tests and final examinations. The Clinical work has got a good weight-age and it is done on regular basis as per schedule and contributes significantly

towards the student's evaluation for relevant course. Passing students in each semester are allowed to join the next semester.

**Standard 5-3**

**The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented. Also processes and procedures for faculty evaluation, promotion must be consistent with institution mission statement. These processes must be periodically evaluated to ensure that it is meeting with its objectives.**

Vacant positions are advertised in the national newspapers. Applications are scrutinized by the Director FUIRS and HR Department. Call letters are issued to the short-listed candidates on the basis of experience, qualification, publications and other factors as determined by the University in the light of HEC guidelines.

University has a very transparent selection system. Selection of candidates is approved by the Rector. Good pay package, favorable teaching environments, research facilities and management support keeps the teachers glued to Foundation.

Faculty performance is evaluated through Performa number 10 by students. QEC evaluates data, makes comparative charts and puts up to the Director. Annual increment is awarded to the faculty members are based on the policy.

**Standard 5-4**

**The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives.**

Students are the recipient of the delivery of course material, through their teachers. The program is actively evaluated by Director/Dean and QEC. The feedback of the taught is best instrument to measure that the course learning outcomes are met. The students give feedback on Performa number 1 regarding course contents and how it was delivered. Through Performa number 10, students evaluate and comment on teacher's efforts, put in to deliver the course contents, his/her general conduct in the class, the environment, he/she, maintains and extra efforts, he/she makes to satisfy student's thirst for knowledge.

Faculty feedback is also taken on HEC Performa number 2 (Faculty Course Review Report – See Annexure-L for Faculty Course Review summary) and Performa number 5 (Faculty Survey – Annexure-G) which is a very useful activity to evaluate the course contents, learning and teaching environments and overall teachers satisfaction level. Course evaluation by teachers also indicates what percentage of desired outcome has been achieved by the course contents and what needs to be improved or changed. This exercise is done once a year. The feedback is discussed with Director and Dean, who focuses on making improvements in the weak areas, identified by the students. Teacher's evaluation performas are fed to the computer and bar charts are made. Each teacher is graded out of 10 marks. The comparative bar charts indicate level of performance of teachers, as visualized by the students. QEC formally submits these bar charts to Rector and Campus Director for their information and taking necessary corrective actions.

**Standard 5-5**

**The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.**

The program is run on semester basis and at the end of each semester examinations are held to evaluate the student's progress. Qualified students are allowed to join next semester and this cycle continues till the end of tenth semester which is the final year. At the end of 5<sup>th</sup> year the internal assessment of all the students is reviewed including the results of all the professionals and final results are announced on that basis.

The program completion process is evaluated on the basis of feedbacks from current students. The feedback is documented and its evaluation indicates degree of satisfaction of the students.

**Criterion 6: Faculty**

**Standard 6-1**

There must be enough full time faculties who are committed to the program to provide adequate coverage of the program areas/courses with continuity and stability. The interests and qualifications of all faculty members must be sufficient to teach all courses, plan, modify and update courses and curricula. All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D. in the discipline.

| Program Area of Specialization | Courses                                   | Courses in the area and average number of sections per year | Number of Faculty Members in each area | Number of Faculty with Ph.D. Degree |
|--------------------------------|---|---|--|-------------------------------------|
| <b>Basic Sciences</b>          | Biochemistry I                            | 2   | 3                                      |                                     |
|                                | Biochemistry II                           | 2   |  |                                     |
|                                | Pharmacology-I                            | 2   |  |                                     |
|                                | Pharmacology-II                           | 2   |  |                                     |
|                                | Pathology & Microbiology-I                | 2   |  |                                     |
|                                | Pathology & Microbiology-II               | 2   |  |                                     |
|                                | Molecular Biology & Genetics              | 2   |  |                                     |
|                                | Anatomy I                                 | 2   | 8                                      | ---                                 |
|                                | Anatomy II                                | 2   |  |                                     |
|                                | Anatomy III                               | 2   |  |                                     |
|                                | Anatomy IV                                | 2   |  |                                     |
|                                | Physiology I                              | 2   |  |                                     |
|                                | Physiology II                             | 2   |  |                                     |
|                                | Physiology III                            | 2   |  |                                     |
|                                | Exercise Physiology                       | 2   |  |                                     |
|                                | Biomechanics & Ergonomics I               | 2   |  |                                     |
|                                | Biomechanics & Ergonomics II              | 2   |  |                                     |
|                                | Kinesiology I                             | 2   |  |                                     |
|                                | Kinesiology II                            | 2   |  |                                     |
|                                | Physical Agents & Electrotherapy-I        | 2   |  |                                     |
|                                | Physical Agents & Electrotherapy-II       | 2   |  |                                     |
|                                | Biostatistics I                           | 2   |  |                                     |
|                                | Biostatistics II                          | 2   |  |                                     |
|                                | Behavioral Sciences (Psychology & Ethics) | 2   |  |                                     |
|                                | Health & Wellness                         | 2   |  |                                     |
|                                | Community Medicine & Rehabilitation       | 2   |  |                                     |

|                                 |   |   |     |   |
|---------------------------------|---|---|-----|---|
|                                 | Evidence Based Practice                                 | 2 |     |   |
|                                 | Scientific Inquiry & Research Methodology               | 2 |     |   |
|                                 | Emergency Procedures & Primary Care in Physical Therapy | 2 |     |   |
|                                 | Prosthetics & Orthotics                                 | 2 |     |   |
|                                 | Research Project  | 2 |     |   |
|                                 | Professional Practice                                   | 2 |     |   |
|                                 | Medical Physics   | 2 |     |   |
|                                 | English-I   | 2 |     | 1 |
|                                 | English-II  | 2 |     |   |
|                                 | English-III   | 2 |     |   |
|                                 | Pakistan Studies  | 2 |     | 1 |
|                                 | Introduction to Computer                                | 2 |     | 1 |
|                                 | Islamic Studies/ Ethics                                 | 2 |     | 1 |
|                                 | Sociology   | 2 |     | 1 |
|                                 | Medicine I  | 2 |     | 5 |
|                                 | Medicine II   | 2 |     |   |
|                                 | Surgery I   | 2 |     |   |
|                                 | Surgery II  | 2 |     |   |
|                                 | Radiology & Diagnostic Imaging                          | 2 |     |   |
| <b>Clinical Specialties</b>     | Therapeutic Exercises & Techniques                      | 2 | 12  |   |
|                                 | Musculoskeletal Physical Therapy                        | 2 |     |   |
|                                 | Cardiopulmonary Physical Therapy                        | 2 |     |   |
|                                 | Neurological Physical Therapy                           | 2 |     |   |
|                                 | Manual Therapy  | 2 |     |   |
|                                 | Differential Diagnosis                                  | 2 |     |   |
|                                 | Integumentary Physical therapy                          | 2 |     |   |
|                                 | Gynecology & Obstetrics Physical Therapy                | 2 |     |   |
|                                 | Sports Physical Therapy                                 | 2 |     |   |
|                                 | Pediatrics Physical Therapy                             | 2 |     |   |
|                                 | Geriatric Physical Therapy                              | 2 |     |   |
|                                 | Supervised Clinical Practice I                          | 2 |     |   |
|                                 | Supervised Clinical Practice II                         | 2 |     |   |
|                                 | Supervised Clinical Practice III                        | 2 |     |   |
|                                 | Supervised Clinical Practice IV                         | 2 |     |   |
| Supervised Clinical Practice V  | 2   |   |     |   |
| Supervised Clinical Practice VI | 2   |   |     |   |
| <b>Total</b>                    |   |   | --- |   |

Table 11: Faculty Distribution by Program Area (table 4.6)

**Standard 6-2**

All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development.

**Also, effective programs for faculty development must be in place. Effective Programs for Faculty Development**

Faculty concurrency in the discipline is based on the criterion set by the University, in the light of HEC guidelines. All faculty members submit their professional resumes on HEC Performa number 9 (Faculty Resume) once a year (Annexure-H). This information is compared with the existing criterion set by university for the concurrency of the post.

All full time faculty members are allocated teaching hours as per HEC defined limit which enables the faculty to have enough spare time to perform scholarly activities and improve their knowledge and skills.

Faculty members are provided adequate resources for research and academic activities. Every faculty member has been provided an access to computer and internet. Faculty members have also access to library materials for academic and research activities. Professional training is provided to faculty if required to enhance their capabilities, through Office of Research Innovation and Commercialization. (ORIC).

The university encourages the faculty to participate in research activities by providing them sufficient financial support within or outside university.

**Standard 6-3**

**All faculty members should be motivated and have job satisfaction to excel in their profession.**

Faculty members are motivated through timely and efficient promotions and Scoring of annual report which includes grading system and high grade achievers are motivated that way and give them feedback regarding their performance.

## **Criterion 7: Institutional Facilities**

### **Standard 7-1**

**The institution must have the infrastructure to support new trends in learning such as e-learning.**

The university has provided learning resource center facilities to faculty members and students including access to books, print journals and e-journal.

Students and faculty have been provided a number of computer systems in the library to access e-learning section. Every student has been provided to access the e-learning resources from within the university library.

### **Standard 7-2**

**The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel.**

The university library has enough technical books in hard copies to support the program learning. The internet access to the external universities libraries provides opportunities to the students and faculty to obtain knowledge from their technical resources.

The library is staffed with 2 professionals to help students and faculty members to get access to required books or learning material efficiently.

### **Standard 7-3**

**Class-rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities.**

Class rooms and faculty staff rooms are sufficient to run the program as per desired schedule.

## **Criterion 8: Institutional Support**

### **Standard 8-1**

**There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars.**

University allocates enough financial resources each year to hire competent faculty as required. Faculty members are retained by giving them good remuneration, favorable teaching environment, research facilities and management support.

Faculty members are also provided adequate resources for research and academic activities to maintain their competence. Every faculty member has been provided access to computer and internet. Faculty members have also access to library materials



for academic and research activities. Professional training is also provided to faculty if required to enhance their capabilities.

**Standard 8-2**

**There must be an adequate number of high quality graduate students, research assistants and Ph.D. students.**

The university follows the guidelines of HEC for admission in this program. The number of under graduating students is approx. 500. Currently there are 5 Ph.D. scholars in the FUIRS faculty. Moreover, FUIRS has 2 research projects sponsored by HEC in which 4 faculty members of FUIRS are involved (2 as principal and 2 as co-principal investigators).

**Standard 8-3**

**Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities.**

Library at FUIC holds 10,320 books for Health care programs. Sufficient numbers of computers are available to be used by the students. Library is organized to accommodate 50 students (male, female).

Laboratories at FUI holds adequate equipment to be used by the students to carry out desired experiments and laboratory work. Each year a handful of budget is allocated for laboratories to maintain and upgrade the equipment and other facilities.

The computing facilities at FUI are of excellent standards and provides platform to students to enhance their learning capabilities.

**Conclusion**

The self-assessment report of the Foundation University Institute of Rehabilitation Sciences (FUIRS) Foundation University Islamabad Campus, gives strengths and weaknesses of the program. The management is striving hard to improve infrastructure for establishment of conducive environments for studies. The faculty is imparting quality education, introducing innovative techniques and is conducting quality research to produce competent Health professionals. The report is based on, 8 criterion and 31 standards as given in HEC's Self-Assessment Manual. The program mission objectives and outcomes are assessed and strategic plans are presented to achieve the goals, which are again measurable through definite standards. Weaknesses are identified which are related to Lack of emphasis on extra-curricular activities and online access to medical journals up-gradation. Pre-requisites are fully observed, examinations are held

on schedules, academic schemes are prepared well in advance, transparent admission, registration and recruiting policy are some of the strong areas of this program. The number of courses along with titles and duration for each year course contents for degree program are thoroughly planned. Their efficacy was measured through different standards and it was found to be satisfactory.

Proper steps are taken to guide the students for program requirements, communication, meetings, tutorial system, tours, students-teacher interaction etc. As regards the process control covering admission, registration, recruiting policy, courses and delivery of material, academic requirements, performance and grading, university. Higher Education Commission, have set forth proper rules, which are properly followed. At present there are 21 competent faculty members. However, faculty members need motivation for advanced knowledge, research and external training.

Institutional facilities were measured through Criterion 3; infrastructure, library, class room and faculty offices have been established. Institutional facilities need to be strengthened. Accordingly, institutional support will greatly promote and strengthen academic, research, management and leadership capabilities.

In conclusion, the strong and weak areas of the program are as under:-

### **Strong Areas**

- Academic calendar is adhering to and examinations schedule prepared at the beginning of the year.
- Curriculum Design, development and organization are based upon set, well defined and approved criteria by HEC
- Properly scheduled Examinations and classes.
- Number of Courses along with their titles and credit hours for each year, course contents for degree program are fully planned
- Transparent admission, registration and recruiting policy
- Curriculum is accredited by HEC
- Keeping in view ISLAMIC VALUES inculcating state of the “ART EDUCATION” most of the students specifically girl’s students would prefer to join this institution.

### **Weaknesses**

- Lack of emphasis on extra-curricular activities
- lack powerful and expanded international library with online access to medical journals

### **Class Room Improvements**

- Class rooms have adequate seating capacities, Lights and Fans and ACs especially in summer, Whiteboard, Sound system for class rooms.

### **Laboratory Equipment**

- Laboratory Equipment's have been Up-gradated.

### **Regular Teacher Training**

- Excellent communication skills are required
- Training of Young Faculty
- Improve the Teaching Methodology
- Preparation and delivery of lectures
- Evaluation of students

### **Facilities for Students**

- Ample sitting facilities in lawns and under shade
- Sport facilities (Basketball, Badminton, Table tennis, Cricket ground)

### **Faculty Development**

- Indigenous Plans for faculty development
- Practical skills should be enhanced
- Research facilities and funds
- Balance of teaching workload and research activities
- University Increments after the accomplishment of higher degree of education (PHD).
- International opportunities for courses/ certification

**Annexure – A: Alumni Survey Results**

Not applicable.

**Annexure – B: Employer Survey Results**

Not applicable.

**Annexure – C: Students Course Evaluation**

Incorporated within Report

**Annexure – D: Student Teachers Evaluation Feedback**

Incorporated within Report

**Annex –E (List of Research Papers)**

| S # | Author's Name   | No  | Title   | Journal  | Category                | Year/Volume                              |
|-----|---|-----|---|--|-------------------------|--|
| 1.  | <b>Dr. Naureen Tassadaq</b><br>(Director)                     | 1.  | "Total Knee arthroplasty FFH, Rawalpindi experience"  | Fauji Foundation Hospital Journal                    |                         | FFHJ 2000; 1 (1) (46-49)                 |
|     |   | 2.  | A Presentation on Rehabilitation of Myopathies  | Armed Forces Postgraduate Medical Institute (AFPGMI) |                         | Mar 2002                                 |
|     |   | 3.  | Dissertation for FCPS in Physical Medicine and Rehabilitation. "Role of Therapeutic Exercises in Thoracic Outlet Syndrome"  | College of Physicians and Surgeons Pakistan          |                         | Aug 2005                                 |
|     |   | 4.  | Role of therapeutic exercises in neurogenic thoracic outlet syndrome  | Journal of Ayub Medical College, JAMC                |                         | 2008; 19:85-88                           |
|     |   | 5.  | Role of Intra-Articular Corticosteroid Injections in Pain Management during Physical Rehabilitation of Moderate to Severe Cases of Knee Osteoarthritis.                 | Journal of Army Medical Corps                        |                         | 2013; ISSN 0030-9648                     |
|     |   | 6.  | Prevalence of Cardiovascular Risk factors among professionals of Rawalpindi & Islamabad.  | JPUMHS   | N/A                     | 2015; Volume 5, Issue 3, pg. no. 117-125 |
|     |   | 7.  | Frequency of obesity among teenagers.   | Foundation University Medical Journal                | N/A                     | 2015; Volume 2, Issue 1, pg. no 21-25    |
|     |   | 8.  | Effectiveness of forced closure stability exercises versus core stability exercises in patients of mechanical back aches  | JRCRS  | N/A                     | 2016; Volume 3, Issue 2, Pg. 60-62       |
|     |   | 9.  | Anxiety level of caregivers of congenital Talipes Equinovarus   | Rawal Medical Journal (RMJ)                          | X                       | Vol 41. No.2, April-June 2016            |
|     |   | 10. | Impact of social media on attitudes and professional growth of physical therapy students of Foundation University, Islamabad, Pakistan                                  | Rawal Medical Journal (RMJ)                          | X                       | Accepted, 2018                           |
|     |   | 11. | Association of breast feeding positioning with musculoskeletal pain in post-partum mothers of Rawalpindi  | Journal of Pakistan Medical Association (JPMA)       | W<br>IF=(<br>0.61<br>6) | Accepted, 2018                           |
| 2.  | <b>Dr. Furqan Ahmed Siddiqi</b><br>(Associate Dean Academics) | 1.  | Effects of physiotherapy in combination with intraarticular steroid injections compare with intraarticular injections alone for the treatment of Rotator Cuff Syndrome. | IJCRB  |                         | August 2012: 4(4): 55-67                 |
|     |   | 2.  | Effects of postural drainage physical therapy techniques on in-patient management of pneumonia.   | RMJ  | X                       | 2012; 37(3): 250-252                     |
|     |   | 3.  | The efficacy of rib cage mobilization on lung function in COPD patients.  | RMJ  | X                       | 2013; 38(1): 36-39                       |
|     |   | 4.  | Cross sectional survey of prevalence of low back pain in forward bend sitting posture.  | RMJ  | X                       | 2013; 38(3): 253-255                     |
|     |   | 5.  | Clinical practice pattern in final year Physical Therapy students of Pakistan in 2012.  | RMJ  | X                       | 2013; 38(3): 298-300                     |
|     |   | 6.  | The preferred academic and clinical specialty of final year student of Physical Therapy.  | RMJ  | X                       | 2013; 38(3): 301-304                     |
|     |   | 7.  | Professional and personal attitude of physical therapy students towards disabled persons.   | RMJ  | X                       | 2013; 38(4): 332-334                     |

|     |   |   |               |   |
|-----|---|---|---------------|---|
| 8.  | The relationship between physical activity levels, sleep habits and academic performance in Physical Therapy students of Rawalpindi and Islamabad”                                | JIIMC   |               | April 2014 9(1): 28-32                                |
| 9.  | Effectiveness of the incentive spirometry in preventing post-operative pulmonary complications after laparotomy.  | RMJ   | X             | 2014; 39(3): 274-276                                  |
| 10. | Efficacy of Cervical Spine Mobilization Versus Peripheral Nerve Slider Techniques (Neurodynamics) in Cervicobrachial Pain Syndrome  | JIIMC   |               | 2015 Vol. 10, No.4                                    |
| 11. | Association of Perceived Stress level (PSS), Quality of life and Coping Strategies in Physical therapy students of Rawalpindi/Islamabad Pakistan.                                 | International Conference on Medical Education Istanbul Turkey |               | Accepted in (ICME 2015)                               |
| 12. | Depression; Prevalence among amputees.  | Professional Med J  | X             | 2015; 22(2): 263-266.                                 |
| 13. | Aerobic Exercises reduces the risk of cardiovascular diseases by lowering LDL and total Body Cholesterol  | RMJ   | X             | 2015; 40(2): 163-164                                  |
| 14. | Risk Factors in the development of knee osteoarthritis: a case-control study.   | Int J Rehabil Sci   |               | 2015, 4(1): 7-10                                      |
| 15. | Blood Gases and Oxygen saturation response to active cycle of breathing techniques in COPD patients during phase I of cardiac rehabilitation.                                     | Rawal Medical Journal   | X             | 2015; 40(3): 259-262.                                 |
| 16. | Frequency of obesity among teenagers.   | FUMJ  |               | 2015; 2(1): 21-25                                     |
| 17. | Research Barriers and facilitators of Physical Therapist of Pakistan  | Rawal Medical Journal   | X             | Vol.41. No.3, July-Sept. 2016                         |
| 18. | Physical Therapy as a profession and its educational development in Pakistan  | JPMA  | W (IF= 0.616) | Vol 66, No 11, November 2016.                         |
| 19. | Effects of Dynamic stability training on balance in healthy older adults  | IJRS  | Z             | Vol 05, issue 02, July to December 2016.              |
| 20. | Effectiveness of Grade 1 and 2 Joint Mobilizations with Non-Steroidal Anti Inflammatory Drugs (NSAIDS) in Comparison with NSAIDS alone in Pain Management of Knee Osteoarthritis. | JRMC  | Z             | 2017;21(3): 257-261                                   |
| 21. | Effect of Early $\leq 3$ Mets (Metabolic Equivalent of Tasks) of Physical Activity on Patient's Outcome after Cardiac Surgery   | Journal of the College of Physicians and Surgeons Pakistan    | W (IF= 0.34)  | 2017, Vol. 27 (8): 490-494                            |
| 22. | Effects of dynamic posturographic balance training versus conventional balance training on mobility and balance in elderly  | Rawal Medical Journal   | X             | Vol.42. No 4, Oct-Dec. 2017                           |
| 23. | Impact of social media on attitudes and professional growth of physical therapy students of Foundation University, Islamabad, Pakistan  | Rawal Medical Journal (RMJ)                                   | X             | Accepted, 2018  |
| 24. | Effectiveness of Physical Activity on Quality of Life in Geriatric Population   | The Professional Medical Journal                              |               | Accepted, 2018  |
| 25. | Training on Biodex Balance System Improves Balance and Mobility in the Elderly: A Pilot Randomized Control  | Journal of Pakistan Medical Association                       |               | Pilot Study Article No. 2017-08-553. Accepted in 2018 |

|    |   |  |   |               |                                      |
|----|---|--|---|---------------|--------------------------------------|
|    |   | Trial  |   |               |                                      |
|    |   | 26. "Psychological Stress and satisfaction with life among physical therapy Students of Rawalpindi/Islamabad, Pakistan"  | JPMA                                      | W (IF= 0.718) | JPMA/ACCEPT/954/2017                 |
|    |   | 27. Rehabilitation Professional Attitude Towards Persons with Disability   | JIMC                                      | Y             | 2018 Vol. 13, No.3                   |
|    |   | 28. Common balance measures and fall risk scores among older adults in Pakistan: normative values and correlation.   | JPMA                                      | W (IF= 0.718) | JPMA/ACCEPT/228/2018                 |
|    |   | 29. Training reduces fall risk and improves mobility among elderly: a randomized controlled trial  | RMJ                                       | Y             | 2018; 43(4): 677-681                 |
|    |   | 30. Effect of chest physical therapy with early mobilization on post operater pulmonary complications in upper abdominal surgeries.                            | Rawal Medical Journal (RMJ)               | X             | Vol 44. No.01. Jan-march 2019        |
| 3. | <b>Dr. Aamer Naeem</b><br>(Assistant Professor) | 1. A Randomized Control Trial to Review the Effectiveness of Combination Therapy versus Steroids Alone, for the Treatment of Bell's Palsy.                     | Ann Pak Inst Med Sci.                     |               | 2013; 9(3):118-21.                   |
|    |   | 2. Determine the preference and feedback of patients about treatment in physical therapy outpatient departments(OPDs)  | JRCRS                                     | N/A           | 2015; 3 (1), 26-29                   |
|    |   | 3. Aptitude of clinical decision making in physiotherapists of Pakistan  | Physiotherapy                             | W (IF= 1.89)  | 2015; 101, e1556-e1557               |
|    |   | 4. Prevalence of different types of headache in medical students of Rawalpindi & Islamabad.  | Int J Rehabil Sci                         | N/A           | 2015, 4(1): 15-19                    |
|    |   | 5. Occupationally related low back pain and associated factors in nurses.  | Rawal Medical Journal                     | X             | 2015; 40(2):145-7.                   |
|    |   | 6. Attitude of medical professionals towards persons with disabilities   | APIMS                                     | Z             | 2016; 12(1),17-20                    |
|    |   | 7. Comparison between effectiveness of mechanical and manual traction combined with mobilization and exercise therapy in patients with Cervical Radiculopathy. | Pak J Med Sci                             | W (IF= 0.44)  | 2016;32(1):31-34                     |
|    |   | 8. Comparison of low level laser therapy and interferential current on post stroke shoulder pain.  | JPMA                                      | W (IF= 0.616) | 2017 May; 67(5):788-789.             |
| 4. | <b>Dr. Wardah Qazi</b><br>(Assistant Professor) | 1. Association of physical activity with GDM (Gestational Diabetes Mellitus) in Pakistani women (author).  | JRCRS                                     | N/A           | VOL 2. 2014                          |
|    |   | 2. The use of mechanical and manual lumber traction in the management of prolapsed Intervertebral disc (PIVD)- A Survey of physical therapists in Pakistan.    | Medical Forum Monthly                     | N/A           | Vol 24 No.2 Feb 2014                 |
|    |   | 3. Anthropometric Measurement Of Primary School Going Children In Karachi.   | International Journal of Physiotherapy    | N/A           | 2016; 3(2), 214-217                  |
|    |   | 4. Effect of Combination Relaxation Exercises on Stress During First Stage of Labour   | JRCRS                                     | N/A           | 2017; 5(1): 29-32                    |
|    |   | 5. Association of Maternal obesity and Preeclampsia with Gestational Diabetes Mellitus   | Khayber Medical University Journal (KMUJ) |               | 2018; Vol 10, No 1,ISSUE 1 - JAN-MAR |
|    |   | 6. Association of breast feeding   | Journal of                                |               | Accepted                             |

|    |  |    |  |   |                |  |
|----|--|----|--|---|----------------|--|
|    |  |    | positioning with musculoskeletal pain in post-partum mothers of Rawalpindi   | Pakistan Medical Association (JPMA)                             |                |  |
|    |  | 7. | Association of neonatal percentile and outcomes in mothers with gestational diabetes mellitus and without gestational diabetes mellitus                                    | Journal of Islamic International medical college trust (JIIMCT) |                | Accepted   |
| 5. | <b>Dr. Muhammad Furqan Yaqoob</b><br>(Assistant Professor) | 1. | Effectiveness of force closure stability exercises with core stability exercise in patients with mechanical back pain.   | JRCRS   | N/A            | 2015; 3(2):60-62   |
|    |  | 2. | Prevalence of cardiovascular risks among Rawalpindi and Islamabad journal of people university of Medical and health sciences  | JPMUHS  | N/A            | 2015; 5(3);1172  |
|    |  | 3. | Conservative management in a patient of cervical syringomyelia : A Case study  | Professional medical journal                                    | X              | 2017; 24(4):627-632.   |
|    |  | 4. | Impact of social media on attitudes and professional growth of physical therapy students of Foundation University, Islamabad, Pakistan                                     | Rawal Medical Journal (RMJ)                                     | X              | Accepted   |
| 6. | <b>Dr. Hina Shafi</b><br>(Assistant Professor)             | 1. | Effect of aerobic exercise on low density lipoprotein in Pakistani patients.   | RMJ   | X              | 2015; 40(2): 162-163   |
|    |  | 2. | Efficacy of Cervical Spine Mobilization Versus Peripheral Nerve Slider Techniques (Neurodynamics) in Cervicobrachial Pain Syndrome.  | JIIMC   | Y              | 2015; 10(4): 262-265   |
|    |  | 3. | The effects of gait training with body weight support (BWS) with no body weight support (no-BWS) in stroke patients.   | JPMA  | W (IF= 0.616 ) | 2017 Jul; 67(7):1094-1096.   |
|    |  | 4. | Impact of social media on attitudes and professional growth of physical therapy students of Foundation University, Islamabad, Pakistan.                                    | Rawal Medical Journal (RMJ)                                     | X              | Accepted   |
| 7. | <b>Dr. Ehab Azim</b><br>(Senior Lecturer)                  | 1. | Perceptions, Practices, and Use of Facebook: A Cross-sectional Survey on Physiotherapy Students in Pakistan.   | J Community Med Health Education                                | N/A            | 4:327. doi: 10.4172/2161-0711.1000327 (2015)                           |
|    |  | 2. | Prevalence of Cardiovascular Risk factors among Health Care Professionals of Rawalpindi and Islamabad.   | JPUMHS  | N/A            | Vol: 5 (3) (2015): 117-21  |
|    |  | 3. | Physical therapy as a profession and its educational development in Pakistan   | J Pak Med Assoc.  | W (IF= 0.616 ) | 2016 Nov; 66(11):1472-1474.  |
|    |  | 4. | Effects of Exergaming On Fall Risk Reduction And Mobility Improvement In Elderly: A Pre-Post Quasi Interventional Study. International Journal of Rehabilitation Sciences. | IJRS  | Z              | 2017 Aug 25; 6(01).  |
|    |  | 5. | Clinical Trial Registry: An essential requirement for physical therapy and health researchers in Pakistan.   | JPMA  | W (IF= 0.616 ) | Accepted for publication in JPMA, Manuscript number (JPMA-2017-07-526) |
|    |  | 6. | Impact of social media on attitudes and professional growth of physical therapy students of Foundation University, Islamabad, Pakistan.                                    | Rawal Medical Journal (RMJ)                                     | X              | Accepted   |
|    |  | 7. | Predatory conferences: Addressing researchers from developing countries.   | (JPMA)  | W (IF= 0.616 ) | Accepted   |



*Doctor of Physical Therapy SAR-2019*

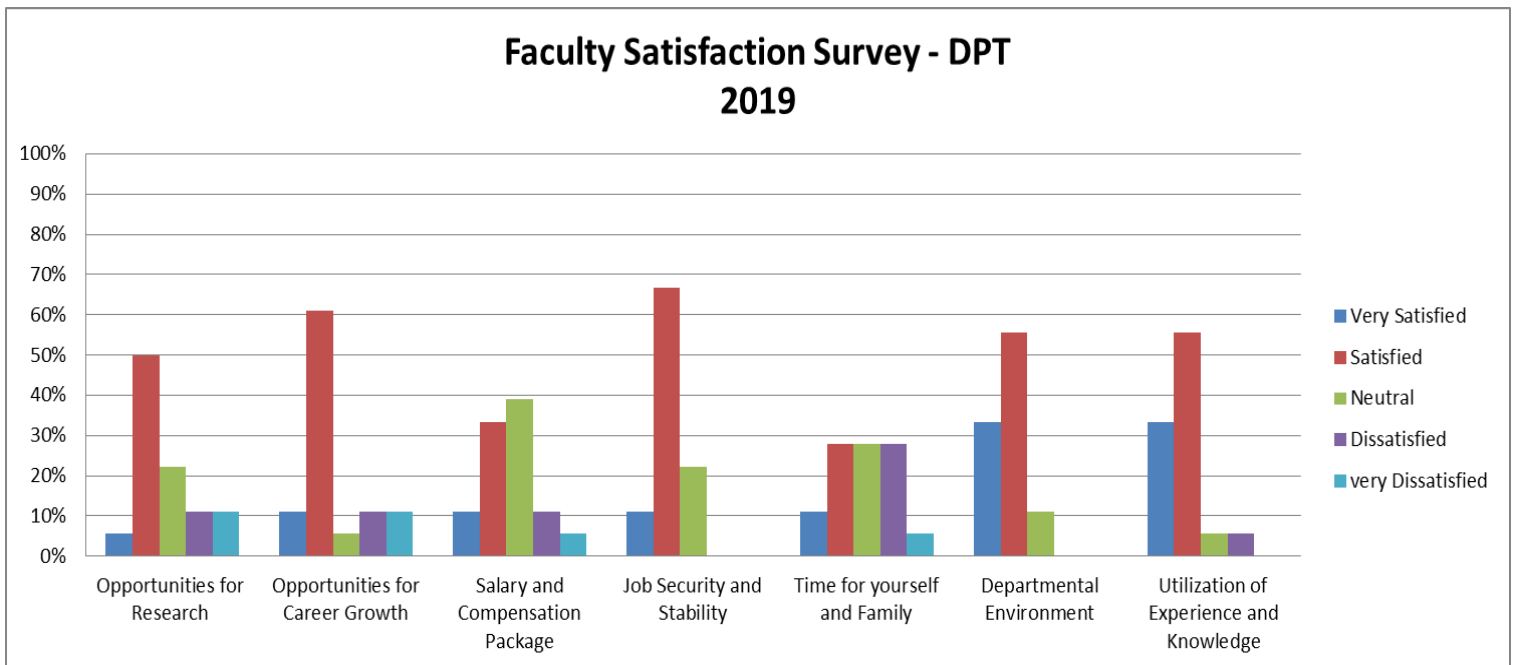
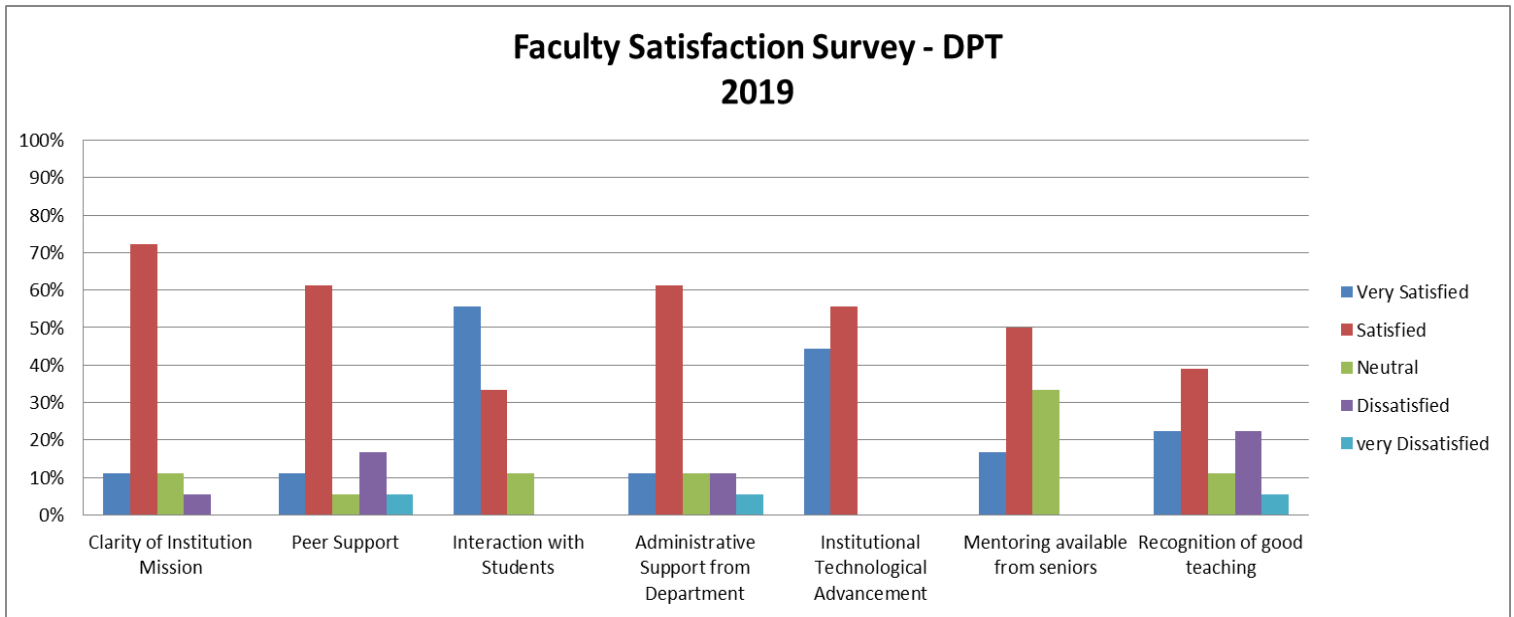
|     |  |    |  |  |               |   |
|-----|--|----|--|--|---------------|---|
|     |  | 8. | Effect of chest physical therapy with early mobilization on post operater pulmonary complications in upper abdominal surgeries.                                    | Rawal Medical Journal (RMJ)                                | X             | Vol 44. No.01. Jan-march 2019                   |
| 9.  | <b>Dr. Sana Khalid</b><br>(Senior Lecturer)        | 1  | Factors associated with fatigue in clinical and non-clinical physical therapy student.   | Rawal Medical Journal.                                     | X             | 2014 Oct; 39(4):392-4.                          |
|     |  | 2  | Perceived Exercise Benefits and Barriers in Physical Therapy Students of Twin Cities.  | IJRS   | N/A           | 2016:4(2)                                       |
|     |  | 3  | Students' academic motivational level in clinical and non-clinical setting.  | Rawal Medical Journal.                                     | X             | 2016;41(1):112-5                                |
|     |  | 4  | Effects Of Exergaming On Fall Risk Reduction And Mobility Improvement In Elderly: A Pre-Post Quasi Interventional Study  | IJRS   | N/A           | 2017;06(1)                                      |
| 10. | <b>Dr. Qurat-ul-ain Saeed</b><br>(Senior Lecturer) | 1  | Prevalence Of Risk Factors Associated With Non-Specific Back Pain Among Female Patients In Afim  | Int J Physiother Res                                       | N/A           | 2016, Vol 4(6):1714-18.                         |
|     |  | 2  | Outcome of Specific Piriformis Stretching Technique in Females with Piriformis Syndrome  | Journal of Pioneering Medical sciences                     | N/A           | VOLUME 7, ISSUE 4 (OCTOBER-DECEMBER, 2017)      |
|     |  | 3  | Effectiveness of functional electrical stimulation (FES) versus conventional electrical stimulation in gait rehabilitation of patients with stroke.                | Journal of the college of physicians and surgeons Pakistan | W (IF= 0.34)  | Vol.27(11):703-706                              |
|     |  | 4. | Frequency of Pulmonary Impairments Among Patients with stroke  | FUMJ   | N/A           | 2018;3(1):312-34                                |
| 11. | <b>Dr. Sana Bashir</b><br>(Lecturer)               | 1. | Student's Perception About Top Qualities In Health Sciences  | The professional Medical Journal                           | X             | Vol. 22 no. 05 year 2015                        |
|     |  | 2. | Effectiveness of Physical Activity on Quality of Life in Geriatric Population  | The Professional Medical Journal                           | X             | Accepted  |
|     |  | 3. | Impact of social media on attitudes and professional growth of physical therapy students of Foundation University, Islamabad, Pakistan                             | Rawal Medical Journal (RMJ)                                | X             | Accepted  |
|     |  | 4. | Effect of chest physical therapy with early mobilization on post operater pulmonary complications in upper abdominal surgeries.                                    | Rawal Medical Journal (RMJ)                                | X             | Vol 44. No.01. Jan-march 2019                   |
| 12  | <b>Dr. Muhammad Osama</b><br>(Lecturer)            | 1  | A randomized controlled trial comparing the effects of rest breaks and exercise breaks in reducing musculoskeletal discomfort in static workstation office workers | Ann Allied Health Sci.                                     | N/A           | 2015; 1(2):44-48                                |
|     |  | 2  | The prevalence of chronic low back pain and relative disability among farmers of Swat.   | Int J Rehab Sci  | Z             | 2016 5(1): 37-42                                |
|     |  | 3  | Frequency of Congenital Foot Anomalies among children reporting at Chal Foundation, Swabi, Pakistan  | Professional Med J   | X             | 2017; 24(1):139-143. DOI:10.17957/TPMJ/17.3 691 |
|     |  | 4  | Cervical Syringomyelia, Conservative physical therapy management of a patient A case study   | Professional Med J   | X             | 2017; 24(4):627- 632.                           |
|     |  | 5  | Urinary incontinence among Women after multiple pregnancies.   | The Rehabilitation Journal,                                | N/A           | Vol 1 No 01 (2017): April 2017                  |
|     |  | 6  | Use of Nile Tilapia ( <i>Oreochromis niloticus</i> ) skin in the management of skin burns  | JPMA   | W (IF= 0.616) | Vol.67, No.12, December2017                     |

|     |   |   |  |   |              |  |
|-----|---|---|--|---|--------------|--|
|     |   |   |  | )   |              |  |
|     |   | 7 | Use of Trans-cutaneous Electric Nerve Stimulation (TENS) can alleviate labour pain and delay the use of neuraxial analgesia  | JPMA  | W (IF=0.616) | Vol. 68, No. 4, April 2018   |
|     |   | 8 | Posture related musculoskeletal discomfort associated with computer use among undergraduate students   | JPMA  | W (IF=0.616) | Vol. 68, No. 4, April 2018   |
|     |   | 9 | Clinical Trial Registry: An essential requirement for physical therapy and health researchers in Pakistan.   | JPMA  | W (IF=0.616) | Accepted for publication in JPMA, Manuscript number (JPMA-2017-07-526) |
| 13. | <b>Dr. Zara Khalid</b><br>(Lecturer)                | 1 | Factors Associated with pes planus and genu valgum in adolescents  | Professional Medical Journal                                | X            | 2015; 22(10):1237-1244. DOI: 10.17957/                                 |
|     |   | 2 | Effect of Early $\leq 3$ Mets (Metabolic Equivalent of Tasks) of Physical Activity on Patient's Outcome after Cardiac Surgery.   | J Coll Physicians Surg Pak.                                 | W (IF=0.34)  | 2017 Aug; 27(8):490-494.   |
|     |   | 3 | Effectiveness of resistance interval training verses aerobic interval training on peak oxygen uptake in myocardial infarction patients                                       | Journal of Pakistan Medical Association (JPMA)              | W (IF=0.718) | Accepted. Publication awaited.   |
|     |   | 4 | Combined Effect of Aerobic and Resistance Interval Training on Ejection Fraction in Myocardial Infarction  | Journal of the College of Physicians and Surgeons Pakistan  | W (IF=0.34)  | 2019, Vol. 29 (3): 290-292   |
| 14. | <b>Dr. Abrish</b><br>(Lecturer)                     | 1 | Evaluation of the Forward Head Posture, its association with Neck Pain & Quality of life of Female DPT Students  | JRCRS   | N/A          | 2016; 4(2): 59-64  |
|     |   | 2 | Dizziness and its associated factors in Geriatric population impacting functional and psychological status   | J. Med. Sci. (Peshawar, Print)                              | -            | July 2017, Vol. 25, No. 3  |
| 15. | <b>Dr. Madiha Ashfaq</b><br>(Demonstrator)          | 1 | Prevalence of Work-related Musculoskeletal Disorders among Physical Therapists working in Rawalpindi/Islamabad   | JRCRS   | N/A          | 2013; 1(2): 6-11   |
| 16. | <b>Dr. Saba Murad</b><br>(Demonstrator)             | 1 | Frequency of fear avoidance beliefs in patients with neck pain   | JRCRS   | N/A          | 2015; Volume 3, Issue (1)  |
|     |   | 2 | Fear avoidance beliefs contribute to chronicity and severity of neck pain  | Rawal Medical Journal                                       | X            | 2017; Volume 42, Issue (2)   |
| 17. | <b>Dr. Kanwal zafar</b><br>(Demonstrator)           | 1 | Frequency of obesity among teenagers   | Foundation University Med J                                 | -            | 2015; 2(1):21-25   |
| 18. | <b>Dr. Shoaib Kayani</b><br>(Demonstrator)          | 1 | Comparative Effectiveness of Muscle Facilitation and Corrective Kinesio Taping technique in Patients with Non-Specific Low Back Pain   | Annals Of KEMU  |              | Accepted as 1 <sup>st</sup> Author                                     |
|     |   | 2 | Comparative study between Peripheral nerve slider technique & 1 <sup>st</sup> rib mobilization along with conventional Phyuiotherapy in patients with Cervical Radiculopathy | Annals of KEMU  |              | Accepted as Contributing Author  |
| 19. | <b>Dr. Summyia Siddique Malik</b><br>(Demonstrator) | 1 | Frequency of Low Back Pain & its associated factors among boys, college teachers of Twin Cities  | Journal of Physical Therapy & Physical Rehabilitation-OMICS | -            | Published Vol 2:130 Year: 2017   |

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|--|--|--|--|---------------|--|--|
|  |  |  |  | International |  |  |
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**Annexure – F:      Graduating Students Feedback**

**Annexure – G: Faculty Satisfaction Survey**



Annexure – H: Faculty Resume

**Faculty Details of DPT data**

| S#  | Name                            | Designation         | Qualification                                      |
|-----|---------------------------------|---------------------|--|
| 1.  | <b>Dr. Naureen Tasaduq</b>      | Director FUIRS      | MBBS, FCPS, MSC(Pain Medicine)                     |
| 2.  | <b>Dr. Furqan Ahmed Siddiqi</b> | Associate Dean      | BSPT, DPT (Post Professional)<br>PGD PE & TM, PhD* |
| 3.  | <b>Dr. Aamir Naeem</b>          | Assistant Professor | BSPT, DPT (Post Professional)                      |
| 4.  | <b>Dr Warda Ijaz Qazi</b>       | Assistant Professor | BSPT, DPT (Post Professional), PhD*                |
| 5.  | <b>Dr. Furqan Yaqoob</b>        | Senior Lecturer     | BSPT, DPT (Post Professional),MS-OMPT              |
| 6.  | <b>Dr. Hina Shafi</b>           | Senior Lecturer     | BSPT, DPT (Post Professional), MS-SPT*             |
| 7.  | <b>Dr. Ehab Azim</b>            | Senior Lecturer     | DPT, MS-NMPT, PGC(AUS),PhD*                        |
| 8.  | <b>Dr. Sana Khalid</b>          | Senior Lecturer     | DPT, MS-NMPT, PGD(UK), PGC(AUS)                    |
| 9.  | <b>Dr. Furqan Hassan</b>        | Senior Lecturer     | DPT ,MS-OMPT                                       |
| 10. | <b>Dr. Qurat-ul-ain</b>         | Senior Lecturer     | BSPT, PP-DPT, MS-OMPT*                             |
| 11. | <b>Dr. Sana Bashir</b>          | Lecturer            | DPT, MS-CPPT                                       |
| 12. | <b>Dr. Osama</b>                | Lecturer            | DPT, MS-OMPT, PhD*                                 |
| 13. | <b>Dr. Zara Khalid</b>          | Lecturer            | DPT, MS-CPPT, PGC (AUS), PhD*                      |

|     |                               |              |                                       |
|-----|-------------------------------|--------------|---------------------------------------|
| 14. | <b>Dr. Abrish Abbasi</b>      | Lecturer     | DPT, MS-NMPT                          |
| 15. | <b>Dr. Hafiz Ali Bin Asim</b> | Lecturer     | DPT, MS-SPT*                          |
| 16. | <b>Dr. Madiha Ashfaq</b>      | Demonstrator | DPT, MS-CPPT, PGC (AUS)               |
| 17. | <b>Dr. Kanwal Zafar</b>       | Demonstrator | DPT, MS-CPPT                          |
| 18. | <b>Dr. Saba Murad</b>         | Demonstrator | DPT, MS-CPPT                          |
| 19. | <b>Dr. Ruqia Begum</b>        | Demonstrator | DPT, MS-OMPT                          |
| 20. | <b>Dr. Zubaria</b>            | Demonstrator | DPT, MS-NMPT*                         |
| 21. | <b>Dr. Shoaib Kayani</b>      | Demonstrator | DPT, PGC Neurology, PGD (UK),MS-OMPT* |
| 22. | <b>Dr. Summyia</b>            | Demonstrator | BSPT, PP-DPT, MS-CPPT*                |
| 23. | <b>Dr. Muhammad Saqeef</b>    | Demonstrator | DPT, MS-CPPT, PGC (AUS)               |

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|---|---|---|--|--|
| <b>Name</b>                                 | <b>Furqan Ahmed Siddiqi(Physical Therapist)</b>   |   |  |  |
| <b>Personal</b>                             | <b>House No. 36, Street No 16-A, Block B</b><br><b>PWD Housing society Islamabad.</b><br>Mobile:+92-300-4414981<br><br>Email:physio_furqan@yahoo.com, furqan@fui.edu.pk<br><br>Telephone:+92-51-5156093 |   |  |  |
| <b>Experience</b>                           | <b>Sr</b>   | <b>Date</b>   | <b>Title</b>   | <b>Institution</b>   |
|   | 1.  | 15th July 2014 to<br>Date                             | Associate Dean<br>Academics/Associate<br>Professor               | Foundation University<br>Islamabad<br><br>(FUIRS)            |
|   | 2.  | January 2011 to<br>15th July 2014                     | Assistant Professor  | Islamic international<br>Medical College Trust<br><br>(RCRS) |
|   | 3.  | July 2008 to<br>January 2011                          | Physiotherapist  | Fauji Foundation<br>Hospital Rawalpindi                      |
|   | 4.  | Dec 2005 to<br>June 2008                              | Physiotherapist /<br>lecturer                                    | Pakistan Institute Of<br>Medical Sciences<br>Islamabad       |
| 5.  | Jan 02 ,2004<br><br>To<br><br>May 04, 2005  | 2 years of Clinical<br>Practice as<br>Physiotherapist | Department of<br>Physiotherapy –<br><br>Mayo Hospital,<br>Lahore |  |
| <b>Honor and Awards</b>                     | LEAD AUDITOR COURSE BY SGH-UK   |   |  |  |
| <b>Memberships</b>                          | <b>Pakistan Physical Therapy Association (PPTA)</b>   |   |  |  |
| <b>Brief Statement of Research Interest</b> | <ul style="list-style-type: none"> <li>• <b>Cardiopulmonary Physical therapy</b></li> <li>• Neuromuscular Physical Therapy</li> </ul>   |   |  |  |
| <b>Publications</b>                         | 1. Effects of physiotherapy in combination with intraarticular steroid injections compare with intraarticular injections alone for the treatment of Rotator Cuff Syndrome. Published in IJCRB August    |   |  |  |

2012: 4(4): 55-67

2. Effects of postural drainage physical therapy techniques on in-patient management of pneumonia published in RMJ. 2012; 37(3): 250-252
3. The efficacy of rib cage mobilization on lung function in COPD patients published in RMJ. 2013; 38(1): 36-39
4. Cross sectional survey of prevalence of low back pain in forward bend sitting posture published in RMJ. 2013; 38(3): 253-255
5. Clinical practice pattern in final year Physical Therapy students of Pakistan in 2012 published in RMJ. 2013; 38(3): 298-300
6. The preferred academic and clinical specialty of final year student of Physical Therapy published in RMJ. 2013; 38(3): 301-304
7. Professional and personal attitude of physical therapy students towards disabled persons published in RMJ. 2013; 38(4): 332-334
8. PRESENTED PAPER IN **INTERNATIONAL CONFERENCE ON MEDICAL EDUCATION (ICME2013) MAURITIUS**. TITLE  
a. :**“The relationship between physical activity levels, sleep habits and academic performance in Physical Therapy students of Rawalpindi and Islamabad”**published in the **proceedings of JIIMC April 2014 9(1): 28-32**
9. Effectiveness of the incentive spirometry in preventing post-operative pulmonary complications after laparotomy published in RMJ. 2014; 39(3): 274-276
10. Depression; Prevalence among amputees published in Professional Med J 2015; 22(2): 263-266.
11. Aerobic Exercises reduces the risk of cardiovascular diseases by lowering LDL and total Body Cholesterol published in RMJ. 2015; 40(2): 163-164
12. Risk Factors in the development of knee osteoarthritis: a case-control study published in Int J Rehab Sci, 2015, 4(1): 7-10
13. Blood Gases and Oxygen saturation response to active cycle of breathing techniques in COPD patients during phase I of cardiac rehabilitation published in Rawal Medical Journal: 2015; 40(3): 259-262.



14. Efficacy of cervical spine mobilization versus peripheral nerve slider techniques in cervicobrachial pain syndrome.
- 15. Association of Perceived Stress level (PSS), Quality of life and Coping Strategies in Physical therapy students of Rawalpindi/Islamabad Pakistan. Accepted in International Conference on Medical Education (ICME 2015) Istanbul Turkey**
16. Frequency of obesity among teenagers published in FUMJ: 2015; 2(1): 21-25
17. Research Barriers and facilitators of Physical Therapist of Pakistan Rawal Medical Journal: Vol.41. No.3, July-Sept. 2016
18. Physical Therapy as a profession and its educational development in Pakistan JPMA Vol 66, No 11, November 2016.
19. Effects of Dynamic stability training on balance in healthy older adults IJRS Vol 05, issue 02, July to December 2016.
20. Effectiveness of Grade 1 and 2 Joint Mobilizations with Non Steroidal Anti Inflammatory Drugs (NSAIDS) in Comparison with NSAIDS alone in Pain Management of Knee Osteoarthritis. Journal of Rawalpindi Medical College (JRMC); 2017;21(3): 257-261
21. Effect of Early  $\leq 3$  Mets (Metabolic Equivalent of Tasks) of Physical Activity on Patient's Outcome after Cardiac Surgery. Journal of the College of Physicians and Surgeons Pakistan 2017, Vol. 27 (8): 490-494
22. Effects of dynamic posturographic balance training versus conventional balance training on mobility and balance in elderly. Rawal Medical Journal: Vol.42. No 4, Oct-Dec. 2017
23. Impact of social media on attitudes and professional growth of physical therapy students of Foundation University, Islamabad, Pakistan Published in Rawal Medical Journal: vol. 43. No.3.july-sept. 2018
24. Effectiveness of Physical Activity on Quality of Life in Geriatric Population published in "The Professional Medical Journal" :2018; 25(10)
25. Training on Biodex Balance System Improves Balance and Mobility in the Elderly: A Pilot Randomized Control Trial published in Journal of Pakistan Medical Association. Pilot Study Article No. 2017-08-553. Accepted in 2018
26. "Psychological Stress and satisfaction with life among physical therapy Students of Rawalpindi/Islamabad, Pakistan" published in JPMA/ACCEPT/954/2017
27. Rehabilitation Professional Attitude Towards Persons with Disability Published in JIIMC, 2018 Vol. 13, No.3

|                                       | <p>28. Common balance measures and fall risk scores among older adults in Pakistan: normative values and correlation published in JPMA/ACCEPT/228/2018.</p> <p>29. Training reduces fall risk and improves mobility among elderly: a randomized controlled trial published in RMJ, 2018; 43(4): 677-681.</p> <p>30. Effect of chest physical therapy with early mobilization on post operater pulmonary complications in upper abdominal surgeries Published in Rawal Medical Journal: Vol 44. No.01. Jan-march 2019</p> |   |                              |                           |   |
|---------------------------------------|--|---|------------------------------|---------------------------|---|
| <b>Research Grants and Contracts.</b> | <b>Date of approval</b>  | <b>Title</b>  | <b>Agency / Organization</b> | <b>Total Award Amount</b> | <b>Completed/ Funded/ in progress/In review</b> |
|                                       | 9 <sup>th</sup> June 2017  | "Effectiveness of treadmill training with resistive training for balance improvement vs virtual reality balance training in elderly patients" | HEC                          | Rs. 2.7 Million           | Funded  |

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|-----------------------------|---|---|---|
| <b>Name</b>                 | <b>AAMER NAEEM</b>  |   |   |
| <b>Personal</b>             | Postal Address: House no I/17-c,<br>Mohallah Miana, Mianwali, Punjab, Pakistan<br>Phone #: +92-459-231206 (Home)<br>+92-322-9781038(Cell), +92-333-9833401<br>E-mail: <a href="mailto:aamer.naeem@fui.edu.pk">aamer.naeem@fui.edu.pk</a> , <a href="mailto:aamerr.naeem@gmail.com">aamerr.naeem@gmail.com</a> |   |   |
| <b>Experience</b>           | May 2016-present  | <b>Assistant Professor</b>                              | Foundation University<br>Institute of<br>Rehabilitation<br>Sciences, Foundation<br>University Islamabad |
|                             | Dec 2014-April<br>2016  | <b>Senior<br/>Lecturer/clinical<br/>physiotherapist</b> | Riphah international<br>University Islamabad/<br>Pakistan Railway<br>Hospital                           |
|                             | July 2014-Dec<br>2014   | <b>Lecturer/clinical<br/>instructor for DPT</b>         | Department of<br>Physical therapy,<br>University of<br>Sargodha   |
|                             | April 2011-june<br>2014   | <b>Lecturer/clinical<br/>physiotherapist</b>            | Riphah international<br>University/ Pakistan<br>Railway Hospital  |
|                             | Jan 2011- Jan 2014  | <b>Visiting Lecturer</b>                                | Rawalpindi Medical<br>College and Allied<br>Health Sciences   |
|                             | Feb 2010- March<br>2011   | <b>Physiotherapist</b>                                  | Subh-e-Nau<br>(Muzaffarabad)  |
|                             | April 2009- Jan<br>2010   | <b>Physiotherapist</b>                                  | The Neurocounsel<br>(Islamabad)   |
|                             | Jan 2008- March<br>2009   | <b>Physiotherapist</b>                                  | Shalamar Hospital<br>Lahore   |
|                             | Oct 2007- Dec<br>2007   | <b>Volunteer<br/>physiotherapist</b>                    | Shalamar Hospital<br>Lahore   |
| <b>Honor and<br/>Awards</b> | NIL   |   |   |

| Memberships  | Member Pakistan Physical Therapy Association (PPTA) |      |        |   |
|--|---|------|--------|---|
| Graduate Students<br>Postdocs<br>Undergraduate Students<br>Honour Students | <b>Graduate</b>                                     | 2016 | DPT    | <b>Prevalence of low back pain in college teachers</b>  |
|  | <b>Graduate</b>                                     | 2019 | DPT    | <b>Frequency of fear avoidance belief and its correlation with balance and mobility in knee osteoarthritis patients of Rawalpindi &amp; Islamabad</b> |
|  | <b>Post graduate</b>                                | 2016 | PP-DPT | <b>Association between upper trapezius muscle length and functional status of patients with neck pain</b>   |

|   |   |      |                         |  |
|---|---|------|-------------------------|--|
|   | <b>Post Graduate</b>  | 2016 | M.Phil (Home Economics) | <b>Effects of Diet with Physical Therapy and Hormone Replacement Therapy among Female Patients with Osteoporosis</b> |
| Service Activity                            | <b>NIL</b>  |      |                         |  |
| <b>Brief Statement of Research Interest</b> | My primary research interest is in the area of shoulder and knee pathologies and their treatment regimens |      |                         |  |

| <b>Name</b>             | <b>Wardah Ajaz Qazi</b>   |               |        |               |           |     |             |
|-------------------------|---|---------------|--------|---------------|-----------|-----|-------------|
| <b>Personal</b>         | <p>House no. 1711<br/> Street no. 53<br/> Usman Block Bahria Town Rawalpindi<br/> Cell: 0092 321 2042129<br/> 0092 321 2734877</p> <p>E-Mail: <a href="mailto:warda.qazi@riphah.edu.pk">warda.qazi@riphah.edu.pk</a></p> <p>Qualification:</p> <ul style="list-style-type: none"> <li>• <i>PhD in Rehabilitation Sciences- In Process- Isra University Islamabad</i></li> <li>• <i>Post Professional Doctor of physical therapy- Riphah International university Islamabad</i></li> <li>• <i>Bachelor in Physical therapy- Ziauddin University Karachi</i></li> </ul> |               |        |               |           |     |             |
| <b>Experience</b>       | <ul style="list-style-type: none"> <li>• Feb 10, 2017 till now, Assistant Professor, Institute of Rehabilitation Sciences, Foundation University Islamabad</li> <li>• Feb 20, 2012 till Feb 3, 2017, Senior Lecturer, Riphah International University Islamabad</li> <li>• April 1, 2010 till Feb 17, 2012, Senior lecturer, Margalla Institute of Health sciences</li> <li>• November 01, 2008 to November 30 2009, Physical therapist, Madina Teaching Hospital, University medical and Dental College Faisalabad</li> </ul>  |               |        |               |           |     |             |
| <b>Honor and Awards</b> | List honors or awards for scholarship or professional activity.   |               |        |               |           |     |             |
| <b>Memberships</b>      | Admission committee<br>Inquiry committee<br>Recruitment committee<br>World Disability Day- Reception Committee<br>International Interdisciplinary Health conference\<br>Evaluation of the Demonstrators- Probation<br>Financial Assistance Evaluation<br>Annual Day FUI<br>Exam Conductance<br>Entrance Exam Duty<br>Day one ceremony   |               |        |               |           |     |             |
| Graduate Students       | <table border="1"> <thead> <tr> <th>Years</th> <th>Degree</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>2018 Fall</td> <td>DPT</td> <td>Hira Khalid</td> </tr> </tbody> </table>   | Years         | Degree | Name          | 2018 Fall | DPT | Hira Khalid |
| Years                   | Degree  | Name          |        |               |           |     |             |
| 2018 Fall               | DPT   | Hira Khalid   |        |               |           |     |             |
| Postdocs                | <table border="1"> <tbody> <tr> <td>2018 Fall</td> <td>DPT</td> <td>Mishaal Asif,</td> </tr> </tbody> </table>  | 2018 Fall     | DPT    | Mishaal Asif, |           |     |             |
| 2018 Fall               | DPT   | Mishaal Asif, |        |               |           |     |             |

|   |   |            |               |
|---|---|------------|---------------|
| Undergraduate<br>Students<br><b>Honour Students</b> | 2018 Fall   | DPT        | Hazeefa Bibi, |
|   | 2018 Fall   | DPT        | Rida Fatima   |
|   | 2019 Spring   | DPT        | Nida Mumtaz   |
|   | 2019 Spring   | DPT        | Manaam Amir   |
|   | 2019 Spring   | DPT        | Abeera Adnan  |
|   | 2019 Spring   | DPT        | Iman Jalil    |
|   | 2019 Spring   | DPT        | Shazma Farooq |
| 2019 Spring   | DPT   | Amna Bajwa |               |
| <b>Brief Statement of Research Interest</b>         | <b>Women Health Physical therapy</b><br>Medical education |            |               |

|                           |  |
|---------------------------|--|
| <b>Name</b>               | <b>MUHAMMAD FURQAN YAQOOB</b>  |
| <b>Personal</b>           | House No. 642, Mamoonsi Road, Tariqabad Lalkurti,<br>Rawalpindi, Pakistan<br>Cell: +92-346-5333 101, +92-311-3331717<br>Home: +92-51-512 1367<br>Email: <a href="mailto:furgan.yaqoob@fui.edu.pk">furgan.yaqoob@fui.edu.pk</a>   |
| <b>Experience</b>         | 10 <sup>th</sup> November, 2014 to till date<br>Foundation University Islamabad<br>Assistant Professor<br>12 <sup>th</sup> September, 2014 to November 2014<br>Riphah International University Islamabad<br>Lecturer<br>30 <sup>th</sup> August 2010 to 13 <sup>th</sup> October, 2014<br>Principal Practitioner Physical Therapist (Senior Physical therapist)<br>Shifa International Hospital Islamabad<br>(JCIA recognized) |
| <b>Honor and Awards</b>   | Gold medalist university of Health Sciences Lahore 2010  |
| <b>Memberships</b>        | MPPTA<br>Lead Auditor IIRCA UK 2015  |
| Undergraduate<br>Students | <b>1.1.1</b> Final year DPT students <ul style="list-style-type: none"> <li>• Khadija Shafqat</li> <li>• Malika Abid</li> <li>• Asim Javed</li> <li>• Maria Intikhab</li> <li>• Silwat Sultana</li> <li>• Quratulain</li> </ul>  |
| Service Activity          | Foundation University<br>Mentoring of students<br><br>Biomedical equipment inspection committee  |



|   |   |
|---|---|
| <b>Brief Statement of Research Interest</b>       | Biomechanics and manual therapy of spine  |
| <b>Publications</b>                               | <p>1. Knowledge and Practices Regarding Team-Based Learning Among Physical Therapy Students (accepted as oral presentation ) in Joint Conference Ottawa-ICME 2018</p> <p>2. Impact of social media on professional growth and attitudes on physical therapy students</p> <p>3. Conservative management in a patient of cervical syringomyelia : A Case study Profesional medical journal 2017; 24(4):627-632.</p> <p>4. Prevalence of Cardiovascular Risks among Rawalpindi and Islamabad. Journal of People University of Medical and Health Sciences. Vol:5 (3);117121</p> <p>5. Effectiveness of Force Closure Stability Exercises with Core Stability Exercises in patients with Mechanical Low Back Pain. JRCRS. (2015),3(2): 60-62.</p> |
| <b>Research Grants and Contracts.</b>             | <p>Date: September 2017</p> <p>Title: Effects of mechanical Vs Manual traction on lumbar curvature and disc height in the management of patients with low back pain.</p> <p>Agency: Foundation University Islamabad</p> <p>Total Award Amount: 0.23 millions</p> <p>Status: Funded and in progress</p>  |
| <b>Other Research or Creative Accomplishments</b> | List patents, software, new products developed, etc.  |
| <b>Selected Professional Presentations</b>        |   |

| Name                    | <b>Dr. Hina Shafi (PT)</b>  |   |                   |      |                   |          |   |            |                               |   |            |   |   |            |          |
|-------------------------|---|---|-------------------|------|-------------------|----------|---|------------|-------------------------------|---|------------|---|---|------------|----------|
| <b>Personal</b>         | Mobile : 92-333-9802435<br>Email : dr.hinashafi.89@gmair.com<br>Address : House # 360/7-C, Street # 4, Fazal Abad,<br>Peshawar Road, Rawalpindi   |   |                   |      |                   |          |   |            |                               |   |            |   |   |            |          |
| <b>Experience</b>       | <p><b>I. Assistant Professor Physical Therapist</b><br/>                 Foundation University Institute of Rehabilitation Sciences, November 2014 to present.</p> <p><b>II. Lecturer/clinical instructor physical therapist</b><br/>                 Margalla Institute of Health Sciences, April 2011 to November 2014.</p> <p><b>III. Internee Physical Therapist</b><br/>                 a. Shifa International Hospital, Dec 2010 to March 2011</p>   |   |                   |      |                   |          |   |            |                               |   |            |   |   |            |          |
| <b>Honor and Awards</b> | <p><b><u>BEST PERFORMANCE</u></b></p> <p><b>GOLD MEDALIST</b><br/>                 2nd position in 1st year bachelor of Physiotherapy<br/>                 MIHS Rawalpindi<br/>                 1st position in 2nd year bachelor of Physiotherapy<br/>                 MIHS Rawalpindi<br/>                 1st position in 3rd year bachelor of Physiotherapy<br/>                 MIHS Rawalpindi</p> <p><b>DISTINCTIONS:</b></p> <table border="1"> <thead> <tr> <th>S No</th> <th>Professional Year</th> <th>Subjects</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>First Year</td> <td>kinesiology &amp; Medical Physics</td> </tr> <tr> <td>2</td> <td>Third Year</td> <td>Therapeutics, Electrotherapy, Special Education &amp; Sociology</td> </tr> <tr> <td>3</td> <td>Final Year</td> <td>Medicine</td> </tr> </tbody> </table> |   |                   | S No | Professional Year | Subjects | 1 | First Year | kinesiology & Medical Physics | 2 | Third Year | Therapeutics, Electrotherapy, Special Education & Sociology | 3 | Final Year | Medicine |
| S No                    | Professional Year   | Subjects  |                   |      |                   |          |   |            |                               |   |            |   |   |            |          |
| 1                       | First Year  | kinesiology & Medical Physics                               |                   |      |                   |          |   |            |                               |   |            |   |   |            |          |
| 2                       | Third Year  | Therapeutics, Electrotherapy, Special Education & Sociology |                   |      |                   |          |   |            |                               |   |            |   |   |            |          |
| 3                       | Final Year  | Medicine  |                   |      |                   |          |   |            |                               |   |            |   |   |            |          |
| <b>Memberships</b>      | <b>PPTA</b>   |   |                   |      |                   |          |   |            |                               |   |            |   |   |            |          |
|                         | <b>1.1.2 Years</b>  | <b>1.1.3 Degree</b>   | <b>1.1.4 Name</b> |      |                   |          |   |            |                               |   |            |   |   |            |          |

|  |  |     |  |
|--|--|-----|--|
| Graduate Students<br>Postdocs<br>Undergraduate<br>Students<br><b>Honour Students</b> | Fall 2018-<br>spring 2019  | DPT | Assessment of agility<br>in elderly population of<br>Rawalpindi and<br>Islamabad |
| Service Activity   | <b>Member of welfare society FUIC</b><br>Member of Psychological Counselling Committee FUIC<br>Seating committee FUIRS |     |  |
| <b>Brief Statement of<br/>Research Interest</b>                                      | <b>Prevention of Sports injuries</b>   |     |  |



| <b>Name</b>  |                        | <b>Qurat-ul-ain Saeed</b>   |   |                               |             |        |      |                           |     |  |                          |     |                |
|--|------------------------|---|---|-------------------------------|-------------|--------|------|---------------------------|-----|--|--------------------------|-----|----------------|
| <b>Personal</b>  |                        | <b>3072-B, Police Station Road Saddar, Rawalpindi, Cantt.</b><br>03315562889  |   |                               |             |        |      |                           |     |  |                          |     |                |
| <b>Experience</b>  |                        | List current appointment first, each entry as follows:<br><br><b>15<sup>th</sup> Feb, 2018 up-to-date, Senior Lecturer, FUI</b><br><b>13<sup>th</sup> Feb, 2017-15<sup>th</sup> Feb, 2018, Lecturer, FUI</b><br><i>1<sup>st</sup> October, 2013-10<sup>th</sup> Feb, 2017, Physiotherapist, AFIRM</i>   |   |                               |             |        |      |                           |     |  |                          |     |                |
| <b>Honor and Awards</b>  |                        | Gold Medalist in BSPT<br><br>Gold Medalist in Pp-DPT<br><br>Scholarship holder in MS-OMPT   |   |                               |             |        |      |                           |     |  |                          |     |                |
| <b>Memberships</b>   |                        | <b>Working in reception, registration and security committees during various events held at FUI. Research Secretary of Research committee at FUIRS.</b>   |   |                               |             |        |      |                           |     |  |                          |     |                |
| Graduate Students<br><br>Postdocs<br><br>Undergraduate<br><br>Students<br><br><b>Honour Students</b> |                        | <p><b>List supervision of graduate students, postdocs and undergraduate honors theses showing:</b></p> <table border="1"> <thead> <tr> <th>1.1.5 Years</th> <th>Degree</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>10<sup>th</sup> semester</td> <td>DPT</td> <td>Noushaba<br/>Fakhira<br/>Shanzay<br/>Seemab</td> </tr> <tr> <td>9<sup>th</sup> semester</td> <td>DPT</td> <td>Uzma<br/>Attiqa</td> </tr> </tbody> </table> <p>Show other information as appropriate and list membership on graduate degree committees.</p> |   |                               | 1.1.5 Years | Degree | Name | 10 <sup>th</sup> semester | DPT | Noushaba<br>Fakhira<br>Shanzay<br>Seemab | 9 <sup>th</sup> semester | DPT | Uzma<br>Attiqa |
| 1.1.5 Years  | Degree                 | Name  |   |                               |             |        |      |                           |     |  |                          |     |                |
| 10 <sup>th</sup> semester  | DPT                    | Noushaba<br>Fakhira<br>Shanzay<br>Seemab  |   |                               |             |        |      |                           |     |  |                          |     |                |
| 9 <sup>th</sup> semester   | DPT                    | Uzma<br>Attiqa  |   |                               |             |        |      |                           |     |  |                          |     |                |
| <b>Service Activity</b>  |                        | <b>FUI-Free Medical Camps</b>   |   |                               |             |        |      |                           |     |  |                          |     |                |
| <b>Brief Statement of Research Interest</b>  |                        | <ol style="list-style-type: none"> <li><b>1. Effects of Nutritional Education as Medication</b></li> <li><b>2. Meaning of Career and success for youth</b></li> <li><b>3. Optimization of hidden capabilities</b></li> </ol>  |   |                               |             |        |      |                           |     |  |                          |     |                |
| <b>Title</b>   | <b>Name of Journal</b> | <b>Impact factor</b>  | <b>Year/Volume/Issue no./ page no (from-to)</b> | <b>National/international</b> |             |        |      |                           |     |  |                          |     |                |
| Frequency of Pulmonary Impairments Among   | FUMJ                   | N/A   | 2018;3(1):312-34                                | National                      |             |        |      |                           |     |  |                          |     |                |

|   |  |             |  |          |
|---|--|-------------|--|----------|
| Patients with stroke  |  |             |  |          |
| Outcome of Specific Piriformis Stretching Technique in Females with Piriformis Syndrome   | Journal of Pioneering Medical sciences                     | N/A         | VOLUME 7, ISSUE 4 (OCTOBER-DECEMBER, 2017) | National |
| Prevalence of risk factors associated with non-specific back pain among female patients in AFIRM  | Int J Physiother Res                                       | N/A         | 2016, Vol 4(6):1714-18.                    | National |
| Effectiveness of functional electrical stimulation (FES) versus conventional electrical stimulation in gait rehabilitation of patients with stroke. | Journal of the college of physicians and surgeons Pakistan | W (IF=0.34) | Vol.27(11):703-706                         | National |
| Prevalence Of Risk Factors Associated With Non-Specific Back Pain Among Female Patients In AFIRM  | Int J Physiother Res                                       | N/A         | 2016, Vol 4(6):1714-18.                    | National |

|                               |  |
|-------------------------------|--|
| <i>Name</i>                   | <b>DR. SANA BASHIR, (MS-CPPT, DPT)</b><br><b>LECTURER, Foundation University Institute of Rehabilitation Sciences (FUIRS) Foundation University Islamabad (FUI)</b>  |
| <b>Personal</b>               | <ul style="list-style-type: none"> <li>• Airport Housing Society, House No 417/1-Street # 15. Sector 3. Rawalpindi</li> <li>• Mobile Number: 0321-8529475</li> <li>• Email: <a href="mailto:sana.bashir65@gmail.com">sana.bashir65@gmail.com</a></li> </ul>  |
| <b>Experience</b>             | <ul style="list-style-type: none"> <li>• <b>1<sup>st</sup> August-2014, Intern</b> at Armed Forces Institute of Rehabilitation Medicine (AFIRM)</li> <li>• <b>10<sup>th</sup> November- 2014, Demonstrator</b> at Foundation University Institute of Rehabilitation Sciences (FUIRS) Foundation University Islamabad (FUI)</li> <li>• <b>19<sup>th</sup> January-2017, Lecturer</b> at Foundation University Institute of Rehabilitation Sciences (FUIRS) Foundation University Islamabad (FUI) till date</li> </ul> |
| <b>Honor and Awards</b>       | <ul style="list-style-type: none"> <li>• <b>“Merit Scholarship Holder”</b> throughout during Doctor of Physical Therapy (DPT)</li> <li>• <b>“Shield of Appreciation”</b> as oral presenter at International Conference of Surgeons</li> <li>• <b>“Shield of Appreciation”</b> as Comparer at International Interdisciplinary Health Conference</li> </ul>  |
| <b>Memberships</b>            | Member of Pakistan Physical Therapy Association (PPTA)   |
| <i>Graduate Students</i>      | Fall-2018, DPT, “Baroreflex sensitivity and its association with Physical Activity in Geriatric Population”  |
| <i>Postdocs</i>               | Fall-2018, DPT “Smoking Trends and their associated short-term complication in Young Adults.”  |
| <i>Undergraduate Students</i> | Spring-2019, DPT, “title in process”   |
| <i>Honor Students</i>         |  |
| <i>Service Activity</i>       | Member of Arts Committee (FUI)<br><br>Member of Stage Committee (FUI)  |

|   |   |
|---|---|
| <b>Brief Statement<br/>of Research<br/>Interest</b> | Very much interested in Research work. As it gives updates about field background knowledge building<br><br>Have Special Interests in: Cardiopulmonary Physical Therapy<br><br>Exercise Physiology, Women Health, Geriatric Physical Therapy<br>Sports Physical Therapy, Genetics and Molecular Biology |
|---|---|



|                   |   |
|-------------------|---|
| <b>Name</b>       | <b>Muhammad Osama</b>   |
| <b>Personal</b>   | <p><b>WS/D-292, Abdullah Manzil, Lane#3, Quaid-e-Azam Colony, Rawalpindi.</b><br/>                 +92 332 554 04 36<br/> <a href="mailto:osamadpt@gmail.com">osamadpt@gmail.com</a>   <a href="mailto:osama@fui.edu.pk">osama@fui.edu.pk</a></p>   |
| <b>Education</b>  | <p><b>PHD-REHABILITATION SCIENCES</b> ▪ 2018 – Ongoing<br/>                 Isra University</p> <p><b>ACMED (ADVANCED CERTIFICATE IN MEDICAL EDUCATION)</b> ▪ 2018 (6 Months)<br/>                 FOUNDATION UNIVERSITY ISLAMABAD – Department of Medical Education<br/>                 Score: 85%</p> <p><b>MS-OMPT (MASTERS IN ORTHOPEDIC MANUAL THERAPY)</b> ▪ 2015 – 2017 (2 years)<br/>                 RIPHAH INTERNATIONAL UNIVERSITY – Riphah College of Rehabilitation Sciences<br/>                 CGPA: 3.94</p> <p><b>DPT (DOCTOR OF PHYSICAL THERAPY)</b> ▪ 2010 – 2015 (5 years)<br/>                 KHYBER MEDICAL UNIVERSITY – Institute of Physical Medicine &amp; Rehabilitation (IPM&amp;R)<br/>                 CGPA: 3.87 (<b>Gold Medalist of the Batch</b>)</p> <p><b>CHPE (POST GRADUATE CERTIFICATE IN HEALTH PROFESSIONAL EDUCATION)</b> ▪ 2015 (6 months)<br/>                 KHYBER MEDICAL UNIVERSITY – Institute of Health Profession Education &amp; Research (IHPER)</p> |
| <b>Experience</b> | <p>List current appointment first, each entry as follows:<br/> <b>Date, Title, Institution.</b></p>   |

|                         |  |
|-------------------------|--|
|                         | <p><b>LECTURER</b> at FOUNDATION UNIVERSITY<br/>ISLAMABAD ▪ MAY 2016 – present</p> <p><b>RESEARCH CONSULTANT</b> at BRAINSTORM RESEARCH<br/>(<a href="http://www.brainstormresearch.org">www.brainstormresearch.org</a>) ▪ JAN 2019 – present</p> <p><b>CONSULTANT PHYSICAL THERAPIST</b> at SAVE &amp; CARE<br/>clinics<br/>ISLAMABAD ▪ SEP 2018 – present</p> <p><b>Associate editor</b> at The Rehab Journal (<a href="http://www.trjournal.org">www.trjournal.org</a>)</p> <p><b>Member scientific advisory committee</b> at the Journal of<br/>Riphah College of Rehabilitation Sciences</p> <p><b>Lecturer</b> at SHIFA TAMEER-E-MILLAT UNIVERSITY<br/>ISLAMABAD ▪ OCT 2015 – MAY 2016</p> <p><b>TEACHING ASSISTANT</b> at KHYBER MEDICAL UNIVERSITY<br/>– IPM&amp;R<br/>PESHAWAR, KPK ▪ FEB-SEP 2015</p> <p><b>PHYSICAL THERAPY INTERNEE</b> at HELPING HAND<br/>(HHIRS)<br/>MANSEHRA, KPK ▪ 2013</p> <p><b>PHYSICAL THERAPY INTERNEE</b> at IMRAN HAROON<br/>GROUP OF PHYSICAL THERAPY SERVICES<br/>KARACHI, SINDH ▪ 2012</p> <p><b>PHYSICAL THERAPY INTERNEE</b> at SHIFA INTERNATIONAL<br/>HOSPITAL<br/>ISLAMABAD ▪ 2011</p> |
| <b>Honor and Awards</b> | <ol style="list-style-type: none"><li><b>1. Gold Medalist (2010-2014) Doctor of Physical Therapy – Khyber Medical University</b></li><li>Acknowledgement for work on Clinical Trial Registration in Pakistan in an editorial published in the JULY 2018 Issue of</li></ol>   |

|  | <p>the Journal of Pakistan Medical Association (Impact Factor 0.718)</p> <ol style="list-style-type: none"> <li>3. 1st prize International Interdisciplinary Health Conference (IIHC – Foundation University Islamabad), Best Oral Presentation Award</li> <li>4. 1st Prize 6th Annual Health Research Conference 2015 (KMU), Best Research Poster Presentation</li> <li>5. 1st Prize 3rd International Health Professional Education Conference (KMU), Best Research Poster Presentation</li> <li>6. 1st Prize, SPARK' 14 GIKI (Digital AD)</li> <li>7. 1st Prize, NUTEC 14 FAST (Short Film)</li> <li>8. 1st Prize, Pakistan Cardiac Society – World Heart Day (Best Poster)</li> <li>9. 1st Prize, Pakiography 14 (Short Film)</li> <li>10. 1st Prize IMEC 14 GIKI (Speed Photography)</li> </ol>   |  |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |
|--|--|--|--------|------|--------|------------------------------|---|---|--|--|--------|------------------------------|--|---------------------------------------|--|--|--------|-----------------------------|--|--|--|--|
| <b>Memberships</b>   | <p><b>List memberships in professional and learned Societies, indicating offices held, committees, or other specific assignments.</b></p>  |  |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |
| <p>Graduate Students</p> <p>Postdocs</p> <p>Undergraduate Students</p> <p><b>Honour Students</b></p> | <p><b>List supervision of graduate students, postdocs and undergraduate honors theses showing:</b></p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">1.1.6 Years</th> <th style="text-align: left;">Degree</th> <th style="text-align: left;">Name</th> </tr> </thead> <tbody> <tr> <td>2019 -</td> <td>Doctor of Physical Therapy -</td> <td>“<b>Normative values and interrelationship of balance measures with fall risk in healthy young individuals, using Dynamic-Posturography</b>”.</td> </tr> <tr> <td colspan="3">(Hira Imran, Mahnoor Waseem, Sadaf Fayyaz).</td> </tr> <tr> <td>2019 -</td> <td>Doctor of Physical Therapy -</td> <td>“<b>Dynamic knee valgus alignment among healthy young adults and its association with single leg triple hop distance and athletic single leg stability</b>”.</td> </tr> <tr> <td colspan="3">(Waqar Baig, Jassia, Ghania, Fatima).</td> </tr> <tr> <td>2019 -</td> <td>Doctor of Physical Therapy-</td> <td>“<b>Comparison of fall risk, balance, sensory integration and single leg athletic stability in young adults with pes planus and pes rectus</b>”.</td> </tr> <tr> <td colspan="3">(Rida Kainat, Laiba Ashfaq, Misha Raza, Sameera Gur, Kiran Tariq, Noor-ul-Huda).</td> </tr> </tbody> </table> <p><b>Member of the FUIRS Research Committee</b></p> | 1.1.6 Years  | Degree | Name | 2019 - | Doctor of Physical Therapy - | “ <b>Normative values and interrelationship of balance measures with fall risk in healthy young individuals, using Dynamic-Posturography</b> ”. | (Hira Imran, Mahnoor Waseem, Sadaf Fayyaz). |  |  | 2019 - | Doctor of Physical Therapy - | “ <b>Dynamic knee valgus alignment among healthy young adults and its association with single leg triple hop distance and athletic single leg stability</b> ”. | (Waqar Baig, Jassia, Ghania, Fatima). |  |  | 2019 - | Doctor of Physical Therapy- | “ <b>Comparison of fall risk, balance, sensory integration and single leg athletic stability in young adults with pes planus and pes rectus</b> ”. | (Rida Kainat, Laiba Ashfaq, Misha Raza, Sameera Gur, Kiran Tariq, Noor-ul-Huda). |  |  |
| 1.1.6 Years  | Degree   | Name   |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |
| 2019 -   | Doctor of Physical Therapy -   | “ <b>Normative values and interrelationship of balance measures with fall risk in healthy young individuals, using Dynamic-Posturography</b> ”.                |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |
| (Hira Imran, Mahnoor Waseem, Sadaf Fayyaz).  |  |  |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |
| 2019 -   | Doctor of Physical Therapy -   | “ <b>Dynamic knee valgus alignment among healthy young adults and its association with single leg triple hop distance and athletic single leg stability</b> ”. |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |
| (Waqar Baig, Jassia, Ghania, Fatima).  |  |  |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |
| 2019 -   | Doctor of Physical Therapy-  | “ <b>Comparison of fall risk, balance, sensory integration and single leg athletic stability in young adults with pes planus and pes rectus</b> ”.             |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |
| (Rida Kainat, Laiba Ashfaq, Misha Raza, Sameera Gur, Kiran Tariq, Noor-ul-Huda).                     |  |  |        |      |        |                              |   |   |  |  |        |                              |  |                                       |  |  |        |                             |  |  |  |  |

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| Service Activity                            | <b>List University and public service activities.</b>  |
| <b>Brief Statement of Research Interest</b> | <b>My research interests include Biomechanics, Musculoskeletal management and Orthopedic Manual Therapy.</b> |

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| Name   | <b>Zara Khalid</b>  |
| <b>Personal</b>  | <b>House No. 15, Street 12, Block D, Phase 1, CBR Housing Society Islamabad expressway, Islamabad<br/>Cell #: 03335415822</b>   |
| <b>Experience</b>  | <i>18<sup>th</sup> April 2016 till date, Lecturer, Foundation University Institute of Rehabilitation Sciences, Foundation University Islamabad</i><br><br><i>1<sup>st</sup> Oct 2015- 31<sup>st</sup> March 2016, Postgraduate Trainee (Cardiopulmonary rehabilitation), Railway General Hospital</i><br><br><i>1<sup>st</sup> March 2015- 31<sup>st</sup> August 2015, Rehab House Officer, Railway General Hospital</i> |
| <b>Honor and Awards</b>  | <i>Gold Medal in MS-CPPT (Masters in Cardiopulmonary Physical Therapy)</i><br><br><i>Gold Medal in DPT (Dr. Of Physical Therapy)</i><br><br><i>Merit scholarships throughout graduate and post-graduate degrees</i>   |
| <b>Memberships</b>   | <b>Nil</b>  |
| Graduate Students<br>Postdocs<br>Undergraduate<br>Students<br><b>Honour Students</b> | <b>Supervision of DPT students:<br/>Fall 2018-Spring 2019, DPT, Association of cardiorespiratory fitness with screen time and physical activity in adolescents</b>  |
| Service Activity   | <b>Member of literary society FUIC</b>  |

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| <p><b>Brief Statement of Research Interest</b></p> | <p><b>Research interests in the area of cardiopulmonary rehabilitation, sports and exercise physiology.</b></p>  |
| <p><b>Publications</b></p>                         | <p><b>Articles published by refereed journals:</b></p> <ul style="list-style-type: none"> <li>▪ <i>Short Communication “<b>Combined Effect of Aerobic and Resistance Interval Training on Ejection Fraction in Myocardial Infarction</b>” published in <b>Journal of the College of Physicians and Surgeons Pakistan (Impact factor 0.372) in March 2019 issue (2019, Vol. 29 (3): 290-292)</b></i></li> <li>▪ <i>Original article “<b>Effect of Early ≤ 3 Mets (Metabolic Equivalent of Tasks) of Physical Activity on Patient's Outcome after Cardiac Surgery</b>” published in <b>Journal of the College of Physicians and Surgeons Pakistan (Impact factor 0.372) in August 2017 issue (JCPSP August 2017, Vol:27, No. 8)</b></i></li> <li>▪ <i>Original article “<b>Pes planus &amp; Genu Valgum; Factors Associated</b>” published in <b>Professional Medical Journal (Category X- Approved by PM &amp;DC) in October 2015 issue. (Professional Med J 2015;22(10):1237-1244. DOI: 10.17957/TPMJ/15.3008)</b></i></li> </ul> <p><b>Manuscripts accepted for publication (in press):</b></p> <ul style="list-style-type: none"> <li>▪ <i>Short Report “<b>Effectiveness of resistance interval training verses aerobic interval training on peak oxygen uptake in myocardial infarction patients</b>” accepted for publication in <b>Journal of Pakistan Medical Association (Impact Factor 0.718)</b></i></li> </ul> <p><b>Manuscripts submitted for publication:</b></p> <ul style="list-style-type: none"> <li>▪ <i>Original article “<b>Frequency and Association of Acute Coronary Syndrome with Waist-Hip Ratio in Asian- Pakistani Population</b>” submitted for publication in <b>Journal of Islamic International Medical College. Date of submission: 2019-01-29 Status: Under Review</b></i></li> </ul> |

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|   | <ul style="list-style-type: none"><li>▪ Original article "<b>Musculoskeletal discomfort among undergraduate students &amp; associated study interference</b>" submitted for publication in <b>Khyber Medical University Journal</b>.<br/><b>Status: Under Review</b></li></ul> |
| <b>Research Grants and Contracts.</b>             | <b>Nil</b>   |
| <b>Other Research or Creative Accomplishments</b> | <b>Nil</b>   |
| <b>Selected Professional Presentations</b>        | <b>Nil</b>   |

|                         |  |                               |                                 |             |
|-------------------------|--|-------------------------------|---------------------------------|-------------|
| Name                    | DR. ABRISH HABIB ABBASI  |                               |                                 |             |
| <b>Personal</b>         | PT,DPT, MS-NMPT (Gold Medalist)<br>Ph: 0333-5763812<br><a href="mailto:abrish.habib@fui.edu.pk">abrish.habib@fui.edu.pk</a>  |                               |                                 |             |
| <b>Experience</b>       | <b>Institution/Organization</b>  | <b>Job Status</b>             | <b>Period</b><br><b>From To</b> |             |
|                         | Foundation University Islamabad  | Lecturer                      | Feb 2017                        | Present     |
|                         | Umer Ayub Medical Complex, Bharakahu, Islamabad  | Consultant Physical Therapist | Aug 2016                        | April 2017  |
|                         | National Institute of Rehabilitation Medicine, Islamabad   | Internee                      | Oct 2015                        | April 2016  |
|                         | Railway General Hospital, Rawalpindi   | Rehab House Officer           | March 2015                      | August 2015 |
|                         | Combined Military Hospital, Murree   | Internee                      | July 2013                       | Sep 2013    |
| <b>Honor and Awards</b> | Awarded Gold Medal on achieving highest CGPA in Post-Graduation(Ms-NMPT)<br>Received letter of appreciation from Physiology Dept. (FUMC) for the practical demonstration<br>Awarded certificate of “Best House Officer of the month” |                               |                                 |             |



|   | during house job<br>Holder of Merit Based Scholarship during 1-10 Semesters<br>DPT   |   |        |      |      |     |   |      |     |   |
|---|--|---|--------|------|------|-----|---|------|-----|---|
| <b>Memberships</b>                                | Member of Scientific Committee IIHC-2018<br>Member of Stage Committee on Day one Ceremony<br>Member of Administrative & Publication Committee on Quaid's Day<br>Member of Food Committee on World Disability Day<br>Member of Security Committee on Farewell   |   |        |      |      |     |   |      |     |   |
| Research Supervision<br>Undergraduate<br>Students | <table border="1"> <thead> <tr> <th>Years</th> <th>Degree</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>2018</td> <td>DPT</td> <td>Mominah Javed<br/>Aniqa Noor<br/>Saman Tauseef<br/>Iqra Asif</td> </tr> <tr> <td>2019</td> <td>DPT</td> <td>Ayesha Mahnoor<br/>Sundus Attique<br/>Iram Shehzadi</td> </tr> </tbody> </table> | Years   | Degree | Name | 2018 | DPT | Mominah Javed<br>Aniqa Noor<br>Saman Tauseef<br>Iqra Asif | 2019 | DPT | Ayesha Mahnoor<br>Sundus Attique<br>Iram Shehzadi |
| Years   | Degree   | Name  |        |      |      |     |   |      |     |   |
| 2018  | DPT  | Mominah Javed<br>Aniqa Noor<br>Saman Tauseef<br>Iqra Asif |        |      |      |     |   |      |     |   |
| 2019  | DPT  | Ayesha Mahnoor<br>Sundus Attique<br>Iram Shehzadi         |        |      |      |     |   |      |     |   |
| Service Activity                                  | Designed Abstract, Poster, Oral Presentations guidelines for IIHC-2018<br>Research Oriented activities<br>Physiology Lab Demonstration<br>Small Group Discussions<br>Clinical Supervision  |   |        |      |      |     |   |      |     |   |

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|  | <p>Research Supervision</p> <p>Conference Report IIHC-2018</p> <p>Post event Report writing (Quaid's day, Day One Ceremony, Sport's Day)</p> <p>Exam Invigilation/Deputy Superintendent</p>   |
| <p><b>Brief Statement of Research Interest</b></p> | <p><b>Interested in neurological Rehab based researches.</b></p> <p><b>Research Projects I worked on:</b></p> <p>“Effects of Mental Imagery with Virtual Reality Training on Upper Limb Functions of Patients with Stroke”</p> <p>“Evaluation of the Forward Head Posture, its association with Neck Pain &amp; Quality of life of Female DPT Students”</p> |

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| <b>Name</b>                   | <b>Dr.Madiha Ashfaq (Physical Therapist)</b>   |  |  |   |
| <b>Personal</b>               | <b>House No. 456, Street No 15</b><br><b>Shahzad Town Islamabad.</b><br>Mobile: 0332-5143479<br><br>E-mail:Dr.Madihaashfaq@gmail.com |  |  |   |
| <b>Experience</b>             | <b>Sr.</b>   | <b>Date</b>                                      | <b>Title</b>   | <b>Institution</b>  |
|                               | 6.   | 17th,September<br>2015 to date                   | Demonstrator   | Foundation University<br>Islamabad<br><br>(FUIRS)   |
|                               | 7.   | January 2014<br>to June 2016                     | Private practice<br>As a<br>Physiotherapist.             | Clinic: Ali Hospital 5-C I-9<br>Markaz  |
|                               | 8.   | 1-September-<br>2014 to 31-<br>December-<br>2014 | Worked as a<br>Senior Internee                           | Pakistan General Railway<br>Hospital Rawalpindi<br>Department of Physical<br>Therapy and<br>Rehabilitation    |
|                               | 9.   | 01-March-2014<br>to 31-August-<br>2014           | House job as a<br>Rehab House                            | Pakistan General Railway<br>Hospital Rawalpindi ,<br>Department of Physical<br>Therapy and<br>Rehabilitation. |
| <b>Honor and Awards</b>       | NIL  |  |  |   |
| <b>Memberships</b>            | NIL  |  |  |   |
| <b>Graduate Students</b>      | <b>Undergraduate Students (Co-supervisor)</b>  |  |  |   |
| <b>Postdocs</b>               | <b>Years</b>   | <b>Degree</b>                                    | <b>Name</b>  |   |
| <b>Undergraduate Students</b> | Fall 2018  | DPT  | Rimsha Qazi<br>Hijab Aleem<br>Maria Ismail<br>Humna Amer |   |
| <b>Honour Students</b>        |  |  |  |   |

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|   |  |  |  |
| <b>Brief Statement of Research Interest</b> | <ul style="list-style-type: none"> <li>• <b>Cardiopulmonary Physical Therapy</b></li> </ul>  |  |  |
| <b>Publications</b>                         | <p>31. Prevalence of Work-related Musculoskeletal Disorders among Physical Therapists working in Rawalpindi/Islamabad “published in JRCRS. 2013; 1(2): 6-11.</p> <p>32. “Dose Response Relationship of Incentive Spirometer on Lung Compliance – A PILOT STUDY” Poster Presentation presented in 2nd International Conference on REHABILITATION SCIENCES at Jacaranda family club.</p> |  |  |
| <b>Research Grants and Contracts.</b>       | NIL  |  |  |

|                       |   |
|-----------------------|---|
| <b>Name:</b>          | Dr.Kanwal Zafar   |
| <b>Qualification:</b> | <b>Masters in Neuro-Muscular Physical Therapy</b><br><b>3.7/4 CGPA</b><br><b>Riphah International University (2016-2017)</b><br><br><b>Doctor of Physical therapy</b><br><b>3.6/4 CGPA</b><br><b>Riphah College of Rehabilitation sciences (2008-2013)</b><br><br><b>FSC (pre-medical) 1st division</b><br><b>F.G G-10/4 college (2006-2008)</b><br><br><b>Matric (science) 1st division</b><br><b>IMCG I-9/4 (2004-2006)</b>   |
| <b>Personal</b>       | Father Name: Muhammad Zafar<br><br>Date of Birth: 26 <sup>th</sup> September 1990,<br><br>Marital status: Married,<br><br>CNIC: 37405-4224279-4<br><br>Cell Number: 0336-1192628<br><br>Email address: <a href="mailto:Dr.kanwalzafar@yahoo.com">Dr.kanwalzafar@yahoo.com</a>   |
| <b>Experience</b>     | <b>February 8th 2017 to Present (2-year)</b><br><b>Foundation University Institute of Rehabilitation Sciences,</b><br><br><b>Working as Demonstrator at Foundation University</b><br><b>Institute of Rehabilitation Sciences, Rawalpindi,</b><br><br><b>September 26th 2016 to January 31st 2017</b><br><b>(5-months) Pakistan Railway Hospital Rawalpindi</b><br><b>Worked in Comprehensive Neuro Rehab Program &amp; MS-</b><br><b>NMPT residency,</b><br><br><b>1st March 2016 to 20th August 2016 (5-months)</b><br><b>Shifa Tameer-e-millat University, Islamabad,</b><br><b>Supervised Clinical instructor at Shifa Tameer-e-millat</b> |

|                                |   |
|--------------------------------|---|
|                                | <p><b>University, Islamabad,</b></p> <p><b>April 26th 2014 to 20th August 2016(2-years)</b><br/> <b>Shifa International Hospital, Islamabad,</b><br/> <b>To access and treat Patients in the following areas:</b></p> <ul style="list-style-type: none"> <li>• <b>Main Rehab OPD, Gynecology, Peads, Orthopedic, Medicine, Surgery, Liver Transplant unit, NSD, Nephrology, Pulmonology, ICU &amp; CCU,</b></li> </ul> <p><b>I have worked as Neuro-Rehab Physical Therapist in the main Neurology Department of Shifa International Hospital from January 1st 2015 to 20th August 2016.</b></p> <p><b>August 1st, 2013 to March 31st 2014 (8-months)</b><br/> <b>Pakistan Railway Hospital, Rawalpindi,</b><br/> <b>Worked as Rehab House Officer at Pakistan Railway General Hospital, Rawalpindi,</b></p> <p><b>July 1st, 2011 to July 19th 2011 (2-weeks)</b><br/> <b>Shifa International Hospital, Islamabad,</b><br/> <b>Worked in Shifa International Hospital as Internee to attend and provide necessary treatments to both indoor and outdoor patients.</b></p> |
| <p><b>Honor and Awards</b></p> | <p>Scored 4/4 GPA in last semester of NM-PT and awarded with scholarship.</p> <p>Got merit based Scholarships in Consecutive 10 Semesters of DPT.</p> <p>Received the Letter of Appreciation from Head of Physiology Department FUIC.</p>   |
| <p><b>Memberships</b></p>      | <ol style="list-style-type: none"> <li><b>1. Pakistan Physical Therapy Association (PPTA),</b></li> <li><b>2. Higher Education Commission of Pakistan,</b></li> <li><b>3. Member of “Reception Committee” in International Interdisciplinary Health conference, IIHC 2018,</b></li> <li><b>4. Organized the event of Quaid’s Day, Held on 25th December 2018 at FUIC.</b></li> </ol>  |
| <p>Undergraduate</p>           | <p><b>1.1.7</b> Co-supervisor of research:<br/> <b>1.1.8</b> <u>Years:</u> 1yr <u>Degree:</u> DPT</p>   |

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| Students | <b>1.1.9</b> <u>Name:</u> Noshaba, Shanzay, Fakhra |
|----------|--|

| <b>Name</b>             | <b>Dr. Saba Murad</b>  |   |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |
|-------------------------|--|---|--|------|-------|-------------|------------------|--------------|-----------|------------------|-----------------------------------|------------------------------------|---------------------|-----------------------|---|-------------------|--------------------------------|------------------------------------|--------------------|---------------------|---|
| <b>Personal</b>         | <b>D/O Murad Khan</b><br>Phone no: 0313-5298192<br><br>Email: dr.saba90@gmail.com<br><br>Qualification: <ul style="list-style-type: none"> <li>➤ DPT (Gold medalist) Riphah International University</li> <li>➤ MS-CPPT (Riphah International University)</li> <li>➤ PGC (Aus.) -Physiopedia</li> <li>➤ Certification in Outcome Based Education by Udeemy</li> </ul>  |   |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |
| <b>Experience</b>       | List current appointment first, each entry as follows: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Date</th> <th style="width: 35%;">Title</th> <th style="width: 40%;">Institution</th> </tr> </thead> <tbody> <tr> <td>9-Feb-17 to date</td> <td>Demonstrator</td> <td>FUIRS/FUI</td> </tr> <tr> <td>Feb-16 to Dec-16</td> <td>Cardiopulmonary research internee</td> <td>Rawalpindi Institute of Cardiology</td> </tr> <tr> <td>April-16 to Sept-16</td> <td>Post Graduate Trainee</td> <td>Pakistan Railway General Hospital, Rawalpindi</td> </tr> <tr> <td>Jan-16 to July 16</td> <td>Cardiopulmonary Rehab Internee</td> <td>Rawalpindi Institute of Cardiology</td> </tr> <tr> <td>March-15 to Aug-15</td> <td>Rehab House Officer</td> <td>Pakistan Railway General Hospital, Rawalpindi</td> </tr> </tbody> </table> |   |  | Date | Title | Institution | 9-Feb-17 to date | Demonstrator | FUIRS/FUI | Feb-16 to Dec-16 | Cardiopulmonary research internee | Rawalpindi Institute of Cardiology | April-16 to Sept-16 | Post Graduate Trainee | Pakistan Railway General Hospital, Rawalpindi | Jan-16 to July 16 | Cardiopulmonary Rehab Internee | Rawalpindi Institute of Cardiology | March-15 to Aug-15 | Rehab House Officer | Pakistan Railway General Hospital, Rawalpindi |
| Date                    | Title  | Institution                                   |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |
| 9-Feb-17 to date        | Demonstrator   | FUIRS/FUI                                     |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |
| Feb-16 to Dec-16        | Cardiopulmonary research internee  | Rawalpindi Institute of Cardiology            |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |
| April-16 to Sept-16     | Post Graduate Trainee  | Pakistan Railway General Hospital, Rawalpindi |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |
| Jan-16 to July 16       | Cardiopulmonary Rehab Internee   | Rawalpindi Institute of Cardiology            |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |
| March-15 to Aug-15      | Rehab House Officer  | Pakistan Railway General Hospital, Rawalpindi |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |
| <b>Honor and Awards</b> | Gold Medal (DPT)<br><br>Academic Achievement Award (DPT)   |   |  |      |       |             |                  |              |           |                  |                                   |                                    |                     |                       |   |                   |                                |                                    |                    |                     |   |

| <p><b>Memberships</b></p>   | <p><b>Member Registration Committee in International Interdisciplinary Health Conference.</b><br/>Member Organizing Committee in Children with Special Needs-a care giver perspective (1 day seminar)</p>   |                |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
|---|---|----------------|--------|------|----------------------------|-----|--------------|------------------|-----|----------|---------------------|-----|---------|----------------------------|-----|----------------|-------------------|-----|--------------|---------------------|-----|--------|----------|-----|------------|
| <p>Graduate Students<br/>Postdocs<br/>Undergraduate Students<br/><b>Honour Students</b></p> | <p><b>List supervision of graduate students, postdocs and undergraduate honors theses showin</b></p> <table border="1"> <thead> <tr> <th>Years</th> <th>Degree</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>1 year (fall 18-spring 19)</td> <td>DPT</td> <td>Malaika Abid</td> </tr> <tr> <td>As above<br/>Asim</td> <td>DPT</td> <td>Muhammad</td> </tr> <tr> <td>As above<br/>Shafqat</td> <td>DPT</td> <td>Khadija</td> </tr> <tr> <td>1 year (spring-19-fall 19)</td> <td>DPT</td> <td>Maria Intikhab</td> </tr> <tr> <td>As above<br/>Gohar</td> <td>DPT</td> <td>Qurat-ul-ain</td> </tr> <tr> <td>As above<br/>Sultana</td> <td>DPT</td> <td>Silwat</td> </tr> <tr> <td>As above</td> <td>DPT</td> <td>Hina Latif</td> </tr> </tbody> </table> | Years          | Degree | Name | 1 year (fall 18-spring 19) | DPT | Malaika Abid | As above<br>Asim | DPT | Muhammad | As above<br>Shafqat | DPT | Khadija | 1 year (spring-19-fall 19) | DPT | Maria Intikhab | As above<br>Gohar | DPT | Qurat-ul-ain | As above<br>Sultana | DPT | Silwat | As above | DPT | Hina Latif |
| Years   | Degree  | Name           |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| 1 year (fall 18-spring 19)  | DPT   | Malaika Abid   |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| As above<br>Asim  | DPT   | Muhammad       |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| As above<br>Shafqat   | DPT   | Khadija        |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| 1 year (spring-19-fall 19)  | DPT   | Maria Intikhab |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| As above<br>Gohar   | DPT   | Qurat-ul-ain   |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| As above<br>Sultana   | DPT   | Silwat         |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| As above  | DPT   | Hina Latif     |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| <p>Service Activity</p>   | <p>-</p>  |                |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |
| <p><b>Brief Statement of Research Interest</b></p>  | <p><b>Fear-avoidance beliefs in neck pain (Thesis project DPT program)</b><br/>Effects of Cardiovascular conditioning exercises on quality of life in patients with dilated cardiomyopathy (Thesis project MS program)</p>  |                |        |      |                            |     |              |                  |     |          |                     |     |         |                            |     |                |                   |     |              |                     |     |        |          |     |            |



|   |  |
|---|--|
| Name  | <b>Dr. Ruqia Begum</b>   |
| <b>Personal</b>   | <p><b>Degree: Doctor of physical Therapy DPT Women medical college Abbottabad, MS(OMPT) Riphah college of Rehabilitation Sciences Islamabad.</b><br/> <b>Address: Foundation university institute of rehabilitation sciences (FUI) Rawalpindi</b><br/> <b>Permanent Address :D/o Said hussain(nerian shareef district sadhnuthi tehsil trarkhal ,post office trarkhal B.P.O murshad Abad AJ&amp;K)</b></p> <p><b>Contact No=03115532544</b></p> <p><b>Email : <a href="mailto:ruqia@fui.edu.pk">ruqia@fui.edu.pk</a></b></p> |
| <b>Experience</b>   | <p>28-02-2017 To present, Demonstrator, Foundation university Institute of Rehabilitation Sciences (FUI) Rawalpindi</p> <p>06-01-2016 To 27-02-2017, House Officers, Physical medicine &amp; Rehab Department at Fauji Foundation Hospital Rawalpindi.</p>   |
| <b>Honor and Awards</b>                                     | Nil  |
| <b>Memberships</b>  | Nil  |
| <p>Undergraduate Students</p> <p><b>Honour Students</b></p> | <p><b>Co supervisor DPT 9<sup>th</sup> &amp;10<sup>th</sup> semester</b><br/> DPT 10<sup>th</sup> semester Fall 2018</p> <ul style="list-style-type: none"> <li>• Hira Khalid</li> <li>• Mishal zulfiqar</li> <li>• Rida Fatima</li> <li>• Hazeefa bibi</li> </ul> <p>DPT 9<sup>th</sup> semester Spring 2019</p> <ul style="list-style-type: none"> <li>• Summaya ayaz</li> <li>• Hafsa javed</li> <li>• Sadia saeed</li> </ul>   |

|   |   |
|---|---|
| Service Activity                            | <b>Nil</b>  |
| <b>Brief Statement of Research Interest</b> | <b>Prevalence of pulmonary impairments among patients with stroke</b><br>Effects of McConnell Taping Combined with strengthening exercises of vastus medialis oblique in females with patellofemoral pain syndrome. |

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| <b>Name</b>             | <b>SHOAIB KAYANI</b>  |
| <b>Personal</b>         | <p><b>House # 51-A, Street # 5, Block-A, Gulshan-e-Taleem Society, Sector H/15 Islamabad, Pakistan</b><br/> <a href="mailto:shoaibkeyani@gmail.com">shoaibkeyani@gmail.com</a><br/>                     0333-5585082</p>  |
| <b>Experience</b>       | <p><b>22 Feb, 2018, Demonstrator, Physical Therapist, Foundation Institute of Rehabilitation Sciences, Fauji Foundation Hospital, Rawalpindi</b></p> <p>Sep 2017- Feb 2018, Demonstrator/ Clinical Instructor, University of Lahore, Islamabad Campus</p> <p>July 2017- March 2018, Consultant Physical Therapist, Maryam Memorial Hospital, Bahria Town Islamabad</p> <p>July 2017 – August 2017, Interne Physiotherapist, Shifa International Hospital Islamabad</p> <p>Dec 2016 - March 2017, Apprentice Physiotherapist, Physiologic Physiotherapy Clinic</p> <p>Nov 2014 – Nov 2016, Apprentice Sports Physiotherapist, Pakistan Rugby Union</p> <p>July 2014 - November 2014, Apprentice Sports Physiotherapist, Pakistan Rugby Union</p> |
| <b>Honor and Awards</b> | <p>1st Position in First Professional Examination at King Edward Medical University</p> <p>2nd Position in Final Professional Examination at King Edward Medical University</p> <p>Distinction Holder in Research Methodology &amp; Report Writing</p> <p>Distinction Holder in Physiotherapy in Neurology</p> <p>Distinction Holder in Biostatistics</p>   |

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|---|--|--------|--------------------------------|
|   | Distinction Holder in Psychology & Psychiatry<br>Co-author of 1st Edition of “Neurological Rehabilitation for DPT Students” with Dr. Irfan Mahmood Dar PT. |        |                                |
| <b>Memberships</b>                          | <b>Member of Pakistan Physical Therapy Association (PPTA) with Registration Number PPTA-3559</b>   |        |                                |
| <b>Graduate Students</b>                    | Years  | Degree | Name                           |
| <b>Postdocs</b>                             | 2019   | DPT    | Saman shaukat<br>Maheen Mazhar |
| <b>Undergraduate Students</b>               |  |        | Maryam Naeem<br>Maria Javed    |
| <b>Honour Students</b>                      | 2019   | DPT    | Rida Dawood<br>Asifa Javed     |
| <b>Service Activity</b>                     | _____  |        |                                |
| <b>Brief Statement of Research Interest</b> | Disorders of Lumbar spine  |        |                                |

|                               |   |  |  |   |
|-------------------------------|---|--|--|---|
| <b>Name</b>                   | Dr.Muhammad Saqeef (Physical Therapist)   |  |  |   |
| <b>Personal</b>               | House No. 456, Street No 15<br>Shahzad Town Islamabad.<br>Mobile: 0312-5039513<br><br>E-mail: dr.saqeef@gmail.com |  |  |   |
| <b>Experience</b>             | <b>Sr.</b>  | <b>Date</b>  | <b>Title</b>   | <b>Institution</b>                                |
|                               | 10.   | 19 <sup>th</sup> March<br>2018 to date                         | Demonstrator   | Foundation University<br>Islamabad<br><br>(FUIRS) |
|                               | 11.   | 1 <sup>st</sup> May 2015<br>to 16 <sup>th</sup> Feb<br>2019    | Clinical<br>Physiotherapist<br>(Cardiopulmonary)   | Bahria International<br>Hospital Phase 8          |
|                               | 12.   | 16 <sup>th</sup> Nov 2015<br>to 16 <sup>th</sup> March<br>2018 | Demonstrator   | Yusra Medical & Dental<br>College, Islamabad      |
|                               | 13.   | 1 March-2014<br>to 24-March-<br>2015                           | Private practice<br>As a<br>Physiotherapist.   | Shaafi International<br>Hospital , PWD Islamabad  |
| 14.                           | 01-March-<br>2015 to 31-<br>August-2015   | House job as a<br>Rehab House                                  | Pakistan General Railway<br>Hospital Rawalpindi,<br>Department of Physical<br>Therapy and<br>Rehabilitation. |   |
| <b>Honor and Awards</b>       | NIL   |  |  |   |
| <b>Memberships</b>            | NIL   |  |  |   |
| <b>Graduate Students</b>      | <b>Years</b>  | <b>Degree</b>  | <b>Title Name</b>  |   |
|                               | Fall 2018   | DPT  | “Assessment of<br>agility in elderly<br>population of<br>Rawalpindi and<br>Islamabad”                        |   |
| <b>Postdocs</b>               |   |  |  |   |
| <b>Undergraduate Students</b> |   |  |  |   |
| <b>Honour</b>                 |   |  |  |   |

|   |   |  |  |
|---|---|--|--|
| <b>Students</b>                             |   |  |  |
| <b>Brief Statement of Research Interest</b> | <ul style="list-style-type: none"><li>• Cardiopulmonary Physical Therapy</li></ul>  |  |  |
| <b>Publications</b>                         | Poster presentation on<br>“Effect of Early Mobility and Chest physical therapy in improving vitals (PR and SPO2) after Upper Abdominal surgeries” |  |  |
| <b>Research Grants and Contracts.</b>       | NIL   |  |  |

## **Annexure – I: Lab Safety Precautions and Working Instructions**

### **Laboratory Staff**

- Be calm and relaxed, while working in Lab.
- No loose wires or metal pieces should be lying on table or near the circuit, to cause shorts and sparking.
- Avoid using long wires, that may get in way while making adjustments or changing leads.
- Keep high voltage parts and connections out of the way from accidental touching and from any contacts to test equipment or any parts, connected to other voltage levels.
- BE AWARE of bracelets, rings, metal watch bands, and loose necklace (if you are wearing any of them), they conduct electricity and can cause burns. Do not wear them near an energized circuit.
- Do not install any software on any computer without getting approval from the respective authorities.
- Make sure all the computers and other equipment's in the labs are switched off at the end of the day.
- Do not unplug a computer or equipment without switching it off first.

### **Students**

- Shut down the computers properly after finishing your work.
- Do not install any software on any computer. If you are unable to find any required software, please contact the IT staff for help and support.
- Do not switch off network printers and scanners.
- Do not damage any equipment in the lab.
- Be considerate to other students while working in the labs.