Bachelor of Physiotherapy - BPT

(4 ½ Year Degree Course)

REGULATION & CURRICULUM

2006

Rajiv Gandhi University of Health Sciences, Karnataka
4th ‘T’ Block, Jayanagar, Bangalore 560 041.
Revised Ordinance Governing Regulations and Curriculum of BPT 4 ½ Year Course – 2006

Copies may be obtained from:

The Director,
Prasaranga,
Rajiv Gandhi University of Health Sciences,
4th T Block, Jayanagar,
Bangalore 560 041
The Emblem of the Rajiv Gandhi University of Health Sciences is a symbolic expression of the confluence of both Eastern and Western Health Sciences. A central wand with entwined snakes symbolises Greek and Roman Gods of Health called Hermis and Mercury is adapted as symbol of modern medical science. The pot above depicts Amrutha Kalasham of Dhanvanthri the father of all Health Sciences. The wings above it depicts Human Soul called Hamsa (Swan) in Indian philosophy. The rising Sun at the top symbolises knowledge and enlightenment. The two twigs of leaves in western philosophy symbolises Olive branches, which is an expression of Peace, Love and Harmony. In Hindu Philosophy it depicts the Vanaspathi (also called as Oushadi) held in the hands of Dhanvanthri, which are the source of all Medicines. The lamp at the bottom depicts human energy (kundalini). The script “Devaḥitham Yadayahu” inside the lamp is taken from Upanishath Shanthi Manthram (Bhadram Karnebhi Shrunuyanadev…), which says “May we live the full span of our lives allotted by God in perfect health” which is the motto of the Rajiv Gandhi University of Health Sciences.
Vision Statement

The Rajiv Gandhi University of Health Sciences, Karnataka, aims at bringing about a confluence of both Eastern and Western Health Sciences to enable the humankind “Live the full span of our lives allotted by God in Perfect Health.”

It would strive for achievement of academic excellence by Educating and Training Health Professionals who

- Shall recognize health needs of community,
- Carry out professional obligations Ethically and Equitably and in keeping with National Health Policy,

It would promote development of scientific temper and Health Sciences Research.

It would Encourage inculcation of Social Accountability amongst students, teachers and institutions.

It would Support Quality Assurance for all its educational programmes

Motto

“Right for Rightful Health Sciences Education”
Revised Ordinance Governing Regulations and Curriculum of Bachelor of Physiotherapy Degree Course (4 ½ Year)

**CONTENTS**

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emblem of RGUHS</td>
<td>3</td>
</tr>
<tr>
<td>Vision Statement of RGUHS</td>
<td>4</td>
</tr>
<tr>
<td>Contents</td>
<td>5</td>
</tr>
<tr>
<td>Notification</td>
<td>7</td>
</tr>
</tbody>
</table>

**Chapter - I Regulations Governing BPT Degree Course**

1. Eligibility                                    | 10       |
2. Duration of the course                         | 11       |
3. Medium of Instruction                          | 11       |
4. Course of Study                                | 11       |
5. Attendance                                     | 13       |
6. Internal Assessment                            | 13       |
7. Schedule of Examination                        | 14       |
8. Criteria for pass                              | 14       |
9. Scheme of University Examination               | 14       |
10. Declaration of Class                          | 18       |
11. Carry Over                                    | 18       |
12. Internship                                    | 19       |

**Chapter II Subjects & Course Content**

*First year BPT*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>20</td>
</tr>
<tr>
<td>Physiology</td>
<td>24</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>31</td>
</tr>
<tr>
<td>Biomechanics</td>
<td>34</td>
</tr>
<tr>
<td>Psychology</td>
<td>37</td>
</tr>
<tr>
<td>Sociology</td>
<td>39</td>
</tr>
<tr>
<td>English</td>
<td>41</td>
</tr>
<tr>
<td>Basic Nursing</td>
<td>42</td>
</tr>
<tr>
<td>Kannada</td>
<td>43</td>
</tr>
<tr>
<td>Orientation to Physiotherapy</td>
<td>46</td>
</tr>
<tr>
<td>Integrated Seminars / PBL sessions</td>
<td></td>
</tr>
</tbody>
</table>

*Second year BPT*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathology</td>
<td>47</td>
</tr>
<tr>
<td>Microbiology</td>
<td>51</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>53</td>
</tr>
<tr>
<td>Exercise Therapy</td>
<td>55</td>
</tr>
<tr>
<td>Electrotherapy</td>
<td>60</td>
</tr>
<tr>
<td>Research Methodology &amp; Biostatistics</td>
<td>65</td>
</tr>
<tr>
<td>First Aid &amp; CPR</td>
<td>67</td>
</tr>
<tr>
<td>Course</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Constitution of India</td>
<td>68</td>
</tr>
<tr>
<td>Introduction to Treatment</td>
<td>69</td>
</tr>
<tr>
<td>Clinical Observation Posting</td>
<td></td>
</tr>
<tr>
<td><strong>Third year BPT</strong></td>
<td></td>
</tr>
<tr>
<td>General Medicine</td>
<td>70</td>
</tr>
<tr>
<td>General Surgery</td>
<td>72</td>
</tr>
<tr>
<td>Orthopedics &amp; Traumatology</td>
<td>74</td>
</tr>
<tr>
<td>Orthopedics and Sports Physiotherapy</td>
<td>78</td>
</tr>
<tr>
<td>Cardio-Respiratory &amp; General Physiotherapy</td>
<td>82</td>
</tr>
<tr>
<td>Allied Therapies</td>
<td>85</td>
</tr>
<tr>
<td>Supervised Rotatory Clinical Training - I</td>
<td>86</td>
</tr>
<tr>
<td><strong>Fourth year BPT</strong></td>
<td></td>
</tr>
<tr>
<td>Neurology &amp; Neurosurgery</td>
<td>87</td>
</tr>
<tr>
<td>Neuro-Physiotherapy</td>
<td>90</td>
</tr>
<tr>
<td>Community Medicine</td>
<td>93</td>
</tr>
<tr>
<td>Community Based Rehabilitation</td>
<td>95</td>
</tr>
<tr>
<td>Ethics, Administration and Supervision</td>
<td>98</td>
</tr>
<tr>
<td>Evidence Based Physiotherapy Practice</td>
<td>100</td>
</tr>
<tr>
<td>Project</td>
<td>101</td>
</tr>
<tr>
<td>Supervised Rotatory Clinical Training - II</td>
<td>101</td>
</tr>
<tr>
<td><strong>APPENDIX - I</strong></td>
<td></td>
</tr>
<tr>
<td>Specifications for Anatomy Theory and Practicals</td>
<td>102</td>
</tr>
<tr>
<td><strong>APPENDIX - II</strong></td>
<td></td>
</tr>
<tr>
<td>Specifications for Physiology Theory and Practicals</td>
<td>103</td>
</tr>
<tr>
<td><strong>APPENDIX - III</strong></td>
<td></td>
</tr>
<tr>
<td>Specifications for Biomechanics Theory and Practicals</td>
<td>104</td>
</tr>
<tr>
<td><strong>APPENDIX - IV</strong></td>
<td></td>
</tr>
<tr>
<td>Subsidiary Subjects – Distribution of Marks</td>
<td>105</td>
</tr>
</tbody>
</table>
NOTIFICATION

Sub: Revised Ordinance relating to Bachelor of Physiotherapy, (4 ½ years Course)-2006

Ref: 1) Minutes of the meeting of Academic Council held on 5/12/2005.
2) Minutes of the meeting of the Syndicate held on 10/01/2006.

---

In exercise of the powers conferred under section 35(1) of RUHS Act, 1994 the Syndicate has been pleased to approve and notify the Revised Ordinance Governing Bachelor of Physiotherapy (BPT- 4 ½ years Course)-2006 as given in the schedule here to annexed.

The Revised Ordinance as specified in the schedule shall apply to students admitted for 1st year Bachelor of Physiotherapy (BPT) Course from the commencement of academic session 2006-07 onwards.

By order,


To,

The Principals of Physiotherapy Colleges affiliated to RUHS.

Copy to,
1. The Secretary to Governor, Raj Bhavan, Bangalore – 560 001
2. The Secretary to Government, Department of Health and Family Welfare, Medical Education, Vikasa Soudha, Bangalore – 560 001.
3. PA to VC/PA to Registrar/Registrar (Evaluation)/Finance Officer
4. Director Curriculum Development/Consultant, Computer Center, RUHS, Bangalore
5. The Deputy Registrar Admission, The Deputy Registrar, Examination Section, RUHS.
6. Public Information Officer,
7. Guard File/office copy.
Notification

Sub: Revised Syllabus and Scheme of examination pertaining to Bachelor of Physiotherapy (BPT) 4½ years course.

Ref: 1. Minutes of the Meeting of the Academic Council dated 06/05/2007
2. Minutes of the meeting of the Syndicate held on 16/05/2007

In Exercise of the powers conferred under section 35(1) of the RGUHS Act 1994, Syndicate decided to implement revised ordinance for 1 year and II year BPT course of 4½ years duration as shown in Annexure appended herewith.

The above ordinance is applicable for the students admitted for BPT (4 ½ years) course from the academic year 2007-08 and onwards.

By Order,

[Signature]

The Principal of all Physiotherapy Colleges affiliated to RGUHS.

Copy To:
1. The Secretary to His Excellency the Governor, Governor's Secretariat, Raj Bhavan, Bangalore - 560 001.
2. The Secretary to Government, Health and Family Welfare Department (Medical Education) Vikasa Soudha, B. R. Ambedkar Veedhi, Bangalore-560001
3. All Members of Syndicate of RGUHS
4. Director, CDC / Deputy Registrar- Affiliation / Deputy Registrar Admission/ Deputy Registrar Examination
5. PA to VC/Registrar/Registrar [Evaluation]/Finance Officer.
6. All officers of the University.
7. Public Information Office.
8. The Home Page of RGUHS Web Site.

[Signature]

[Date]

Other directories/Ordinances & Notifications.
NOTIFICATION

Sub: Implementation of III and IV Year B.P.T. Syllabi for the new 4½ years BPT course.

Ref: 1) Minutes of the Extraordinary meeting of Academic Council meeting held on 15/04/2008 and 16/04/2008.
2) Minutes of the 75th Syndicate meeting held on 14/05/2008.

***

In exercise of the powers conferred under section 35(2) of the RGUHS Act 1994, the Syndicate in its meeting held on 14/05/2008, on the recommendations of Academic Council in its extraordinary meeting held on 15/04/2008 and 16/04/2008 is pleased to approve III and IV year B.P.T. Syllabi for the new 4½ years BPT course as shown in the annexure appended herewith.

The above Ordinance shall come into force with immediate effect.

By Order,

To
Principals of all Physiotherapy colleges affiliated to RGUHS.

Copy to:
1. The Secretary to Governor, Governor’s Secretariat, Raj Bhavan, Bangalore – 560 001.
2. Secretary to Government, Health & Family Welfare Department, (Medical Education), Vikasa Soudha, Bangalore – 560 001.
3. The Director, Department of Medical Education, Anand Rao Circle, Bangalore – 560 009.
4. PA to Vice-Chancellor / Registrar / Registrar (Eva.) / Finance Officer.
5. Director, Curriculum Development Cell.
6. Public Information Officer.
7. The Home Page of RGUHS Website.
SECTION – 1

Regulations Governing BPT Degree Course

These ordinances shall be called “The Ordinances, Syllabus and Scheme of Examination pertaining to the Bachelor of Physiotherapy course, BPT.”

1. ELIGIBILITY

1.1 Qualifying Examination

A Candidate seeking admission to first year Bachelor in Physiotherapy (BPT):

i) Should have passed two year Pre University examination conducted by Department of Pre-University Education, Karnataka State, with English as one of the subjects and Physics, Chemistry and Biology as optional subjects. The candidate shall have passed subjects of English, Physics, Chemistry and Biology as optional subjects. The candidate shall have passed subjects of English, Physics, Chemistry and Biology individually also.

OR

ii) Shall have passed any other examination conducted by Boards/Councils/Intermediate examination established by State Government/Central Government and recognized as equivalent to a two year Pre University Examination by Rajiv Gandhi University of Health Sciences/ Association of Indian Universities (AIU), with English as one of the subjects and Physics, Chemistry and Biology as optional subjects. The candidate shall have passed subjects of English, Physics, Chemistry and Biology as optional subjects. The candidate shall have passed subjects of English, Physics, Chemistry and Biology individually also.

OR

iii) Candidates who have completed Pre-university course with Vocational Physiotherapy as their optional subject are eligible for admission to BPT course.

1.2 Marks

The selection of students to a course of Physiotherapy shall be based on merit provided that:

a). In case of admission on the basis of qualifying examination, a candidate for admission to BPT course must have passed individually in the subjects of Physics, Chemistry, Biology and English and must have obtained not less than 45% marks taken together in Physics, Chemistry and Biology in the qualifying examination. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or Category I, the marks obtained in Physics, Chemistry and Biology together in qualifying examination is not less than 40% instead of 45% as above.
1.3 Age:
A candidate seeking admission to Bachelor of Physiotherapy course should have completed 17 years of age, as on 31st December of the year of admission.

Every candidate before admission to the course shall furnish to Principal of the Institution a certificate of Medical Fitness from an authorized Government Medical Officer to the effect, that the candidate is physically fit to undergo Physiotherapy course.

2. **DURATION OF THE COURSE**

The duration of the BPT Course shall be **four and half years** including internship of six months.

3. **MEDIUM OF INSTRUCTION**

English shall be the medium of instruction for all the subjects of study and for the examinations of the BPT Course.

4. **COURSE OF STUDY - SUBJECTS AND HOUR DISTRIBUTION**

<table>
<thead>
<tr>
<th>TABLE – I</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Subject</th>
<th>Weekly Class hours</th>
<th>Total</th>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First year BPT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Duration 0 -12 months)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Anatomy</td>
<td>8</td>
<td>240</td>
<td>150</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>Physiology</td>
<td>7</td>
<td>210</td>
<td>150</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>Biochemistry</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Biomechanics</td>
<td>6</td>
<td>180</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>5</td>
<td>Psychology</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Sociology</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>English</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Kannada</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Basic Nursing</td>
<td>1</td>
<td>30</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>Orientation to</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physiotherapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Integrated Seminars</td>
<td>3</td>
<td>90</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/ PBL sessions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36</td>
<td>1080</td>
<td>830</td>
<td>250</td>
</tr>
</tbody>
</table>
### TABLE - II

Second year BPT  [Duration 13 -24 months]

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Subject</th>
<th>Teaching hours</th>
<th>Weekly Class hours</th>
<th>Total</th>
<th>Theory</th>
<th>Practi cal</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pathology</td>
<td>2</td>
<td>60</td>
<td>45</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Microbiology</td>
<td>2</td>
<td>60</td>
<td>45</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pharmacology</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Exercise Therapy</td>
<td>8</td>
<td>240</td>
<td>90</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Electrotherapy</td>
<td>8</td>
<td>240</td>
<td>90</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Research Methodology &amp; Biostatistics</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Main Subjects: For University Examination

Subsidiary subjects: Not for University Examination

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Subject</th>
<th>Weekly Class hours</th>
<th>Total</th>
<th>Theory</th>
<th>Practi cal</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>First Aid &amp; CPR</td>
<td>1</td>
<td>30</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Constitution of India</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Introduction to Treatment</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Clinical Observation Posting</td>
<td>9</td>
<td>270</td>
<td></td>
<td></td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36</td>
<td>1080</td>
<td>470</td>
<td>340</td>
<td>270</td>
</tr>
</tbody>
</table>

### TABLE-III

Third year BPT  [Duration 25 -36 months]

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Subject</th>
<th>Teaching hours</th>
<th>Weekly Class hours</th>
<th>Total</th>
<th>Theory</th>
<th>Practi cal</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>General Medicine</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>General Surgery</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Orthopedics &amp; Traumatology</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Orthopedics and Sports Physiotherapy</td>
<td>5</td>
<td>150</td>
<td>90</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Cardio-Respiratory &amp; General Physiotherapy</td>
<td>5</td>
<td>150</td>
<td>90</td>
<td>60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE - IV

**Fourth year BPT** [Duration 37 - 48 months]

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Subject</th>
<th>Weekly Class hours</th>
<th>Total</th>
<th>Theory</th>
<th>Practical</th>
<th>Clinics</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main Subjects: For University Examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Neurology &amp; Neurosurgery</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Community Medicine</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Neuro-Physiotherapy</td>
<td>5</td>
<td>150</td>
<td>90</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Community Based Rehabilitation</td>
<td>5</td>
<td>150</td>
<td>90</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Supervised Rotatory Clinical Training</td>
<td>18</td>
<td>540</td>
<td></td>
<td></td>
<td>540</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subsidiary subjects: Not for University Examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Ethics, Administration and Supervision</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Evidence Based Physiotherapy Practice</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Project</td>
<td>2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36</td>
<td>1080</td>
<td>360</td>
<td>180</td>
<td>540</td>
<td></td>
</tr>
</tbody>
</table>

5. **ATTENDANCE**

A candidate is required to attend at least 80 percent of the total classes conducted in a year in all subjects prescribed for that year, separately, in theory and practical / clinical to become eligible to
appear for the university examination in the first attempt. Principals should notify at their college, the attendance details at the end of each term without fail, under intimation to the University.

6. **INTERNAL ASSESSMENT**

It shall be based on evaluation of periodic tests assignments, clinical presentations etc., (see Annexure -I for example). Regular periodic examinations should be conducted throughout the course. There should be a minimum of two (2) sessional examinations during I, II, III and final year. The average of the two examination marks should be reduced to 20 and 10 for Theory and Practical/Clinical respectively, and sent to the University before the University examination as per notification. Proper record which forms the basis of the Internal Assessment should be maintained for all students and should be available for scrutiny. The marks of periodical tests should be displayed on the student notice board by Principals.

A Candidate must obtain a 50% mark in theory and practical separately in internal assessment to be eligible to write the university examination.

7. **SCHEDULE OF EXAMINATION**

There will be two examinations in a year, to be conducted as per notification issued by the University from time to time.
First, Second, Third and Final Examinations of BPT course shall be held at the end of 1st year, 2nd year, 3rd year and 4th year respectively. The particulars of subjects for various examinations and distribution of marks are shown separately in Tables V to VIII.
The examination for main subjects shall be conducted by the University and for subsidiary subjects by the respective college.

8. **CRITERIA FOR PASS**

1. **Main Subjects**

A candidate is declared to have passed university examination in a subject, if she/he secures 50 % of the marks in theory and 50 % in practical separately. For computation of 50 % marks in theory, the marks scored in the internal assessment [theory] shall be added to the University conducted written and viva voce examination and for a pass in practical, the marks scored in University conducted practical examination and internal assessment [practical] shall be added together.
2. **Subsidiary Subjects**

For a pass in Subsidiary subjects, a candidate shall secure 35% of the total marks prescribed for the subject. The marks obtained should be sent to the University 15 days prior to the commencement of University examination.

9. **SCHEME OF EXAMINATION**

9.1 **SUBJECTS AND DISTRIBUTION OF MARKS**

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Subject</th>
<th>Time</th>
<th>Theory</th>
<th>Viva-Voce</th>
<th>Internal Assessment</th>
<th>Practical</th>
<th>Internal Assessment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anatomy</td>
<td>3 hrs</td>
<td>Maximum Marks</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Physiology</td>
<td>3 hrs</td>
<td>Maximum Marks</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Biochemistry</td>
<td>3 hrs</td>
<td>Maximum Marks</td>
<td>80</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Biomechanics</td>
<td>3 hrs</td>
<td>Maximum Marks</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>*</td>
<td>Biomechanics (2006 Batch only)</td>
<td>3 hrs</td>
<td>Maximum Marks</td>
<td>80</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Section A-Psychology</td>
<td>3 hrs</td>
<td>Maximum Marks</td>
<td>40</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Subject</th>
<th>Time</th>
<th>Theory</th>
<th>Viva-Voce</th>
<th>Internal Assessment</th>
<th>Practical</th>
<th>Internal Assessment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sl.No</td>
<td>Subject</td>
<td>Theory</td>
<td>Practical</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------</td>
<td>--------</td>
<td>-----------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>Max Marks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>General Medicine</td>
<td>3 Hrs</td>
<td>80</td>
<td>-</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>General Surgery</td>
<td>3 Hrs</td>
<td>80</td>
<td>-</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Orthopedics &amp; Traumatology</td>
<td>3 Hrs</td>
<td>80</td>
<td>-</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Orthopedics &amp; Sports Physiotherapy</td>
<td>3 Hrs</td>
<td>100</td>
<td>30</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Cardio-Respiratory &amp; General Physiotherapy</td>
<td>3 Hrs</td>
<td>100</td>
<td>30</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sl.No</td>
<td>Subject</td>
<td>Theory</td>
<td>Practical</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------</td>
<td>-----------------</td>
<td>--------------------</td>
<td>----------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Written</td>
<td>Viva-Voce</td>
<td>Internal</td>
<td>Practical</td>
<td>Internal</td>
<td>Maximum Marks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>Maximum Marks</td>
<td>Assessment</td>
<td>Maximum Marks</td>
<td>Assessment</td>
<td>Maximum Marks</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Neurology &amp; Neurosurgery</td>
<td>3 Hrs</td>
<td>80</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Community Medicine</td>
<td>3 Hrs</td>
<td>80</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>3.</td>
<td>Neuro-Physiotherapy</td>
<td>3 Hrs</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>40</td>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>4.</td>
<td>Community Based Rehabilitation</td>
<td>3 Hrs</td>
<td>100</td>
<td>30</td>
<td>20</td>
<td>40</td>
<td>10</td>
<td>200</td>
</tr>
</tbody>
</table>

9.2 QUESTION PAPER PATTERN FOR BPT EXAMINATION

THEORY

SUBJECTS HAVING MAXIMUM MARKS = 100

<table>
<thead>
<tr>
<th>TYPE OF QUESTION</th>
<th>NUMBER OF QUESTIONS</th>
<th>MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY TYPE</td>
<td>2</td>
<td>(Any TWO out of Three)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>SHORT ESSAY TYPE</td>
<td>12</td>
<td>(Any TWELVE out of Fourteen)</td>
</tr>
<tr>
<td>SHORT ANSWER TYPE</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

SUBJECTS HAVING MAXIMUM MARKS = 80

<table>
<thead>
<tr>
<th>TYPE OF QUESTION</th>
<th>NUMBER OF QUESTIONS</th>
<th>MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY TYPE</td>
<td>2</td>
<td>(Any TWO out of Three)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>SHORT ESSAY TYPE</td>
<td>8</td>
<td>(Any EIGHT out of Ten)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>SHORT ANSWER TYPE</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

SUBJECTS HAVING SECTION A & SECTION B [40 MARKS + 40 MARKS = 80 MARKS]

<table>
<thead>
<tr>
<th>TYPE OF QUESTION</th>
<th>NUMBER OF QUESTIONS</th>
<th>MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY TYPE</td>
<td>SECTION A – 1</td>
<td>(Any ONE out of Two)</td>
</tr>
<tr>
<td></td>
<td>SECTION B – 1</td>
<td>(Any ONE out of Two)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
### Short Essay Type

<table>
<thead>
<tr>
<th>Section A – 4</th>
<th>SECTION B – 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(Any FOUR out of Five)</em></td>
<td><em>(Any FOUR out of Five)</em></td>
</tr>
</tbody>
</table>

### Short Answer Type

<table>
<thead>
<tr>
<th>Section A – 5</th>
<th>SECTION B – 5</th>
</tr>
</thead>
</table>

#### Practical

<table>
<thead>
<tr>
<th>Type of Question</th>
<th>Number of Questions</th>
<th>Marks for Each Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Case</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Short Case</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

#### Viva-voce

Maximim Marks = 30

### Declaration of Class

10. **Declaration of Class**

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

b. A candidate having appeared in all subjects in the same examination and passed that examination in the first attempt and secures 65% of marks or more but less than 75% of grand total marks prescribed will be declared to have passed the examination in First Class.

c. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 50% of marks or more but less than 65% of grand total marks prescribed will be declared to have passed the examination in Second Class.

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

e. The marks obtained by a candidate in the subsidiary subjects shall not be considered for award of Class or Rank.

Please note fraction of marks should not be rounded off clauses (a), (b) and (c)

### Carry Over

11. **Carry Over**
I Year [5 main subjects]:

A candidate who has failed in I year is permitted to carry any two of the five main subjects and shall have to pass these subjects before appearing for the II year examination.

II Year [5 main subjects]:

A candidate who has failed in II year is permitted to carry any two of the five main subjects and shall have to pass these subjects before appearing for the III year examination.

III Year [5 Main subjects]:

A candidate is permitted to carry any two of the failed subjects and shall have to pass these subjects before appearing for the final year examination.

Subsidiary subject - may be carried over by a failed candidate but shall have to pass the same before appearing for the final year examination.

12. INTERNSHIP

There shall be six months (26 weeks) of Internship after the final year examination for candidates declared to have passed the examination in all the subjects. Internship should be done in a teaching hospital recognised by the University limited to within Karnataka only.

No candidate shall be awarded degree certificate without successfully completing six months of Internship.

The Internship should be rotatory and cover clinical branches concerned with Physiotherapy such as Orthopaedics, Cardiothoracic including ICU, Neurology, Neurosurgery Paediatrics, General Medicine, General Surgery, Obstetrics and Gynaecology both in patient and outpatient services.

The 6 months of rotational posting must be covered in the following pattern.

- Physiotherapy OPD (including Pediatrics and OBG wards) 1 month
- Orthopedic wards 1 month
- General Medicine wards (including MICU and CCU) 1 month
- General Surgery wards (including CTS wards, CTS-ICU and Burns) 1 month
Successful Completion – The student must maintain a logbook. On completion of each posting, the same will have to be certified by the faculty in charge of the posting for both attendance as well as work done. On completion of all six postings, the duly completed logbook will be submitted to the Principal/Head of program to be considered as having successfully completed the internship program.

SECTION – 2
First Year
Course Content

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANATOMY</td>
<td>0 – 12 Months</td>
<td>240</td>
<td>150 Hrs</td>
<td>90 Hrs</td>
</tr>
</tbody>
</table>

Total Hours / Week
Lecture: 8 Hrs
Practicals: 4 Hours / Week
Seminars / Tutorials: 3 Hours / Week
Method of Assessment: Written, Oral, Practical

Course Description

It is designed to provide students with the working knowledge of the structure of the human body which is essential foundation for their clinical studies. Studies are concerned with the topographical and functional anatomy of the limbs and thorax. Particular attention is paid to the muscles, bones and joints of the regions. The abdomen, pelvis, perineum, head and neck and central nervous system (CNS) are studied with particular reference to topics of importance to
physiotherapists. The study of the CNS includes detailed consideration of the control of motor function.

THEORY

<table>
<thead>
<tr>
<th>Topic</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology + Embryology + Regional Anatomy</td>
<td>30</td>
</tr>
<tr>
<td>Musculo-skeletal Anatomy</td>
<td>60</td>
</tr>
<tr>
<td>Neuro Anatomy</td>
<td>30</td>
</tr>
<tr>
<td>Applied Anatomy</td>
<td>30</td>
</tr>
</tbody>
</table>

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

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

3. Regional Anatomy

Thorax:

a) Cardio – Vascular System
   Mediastinum: Divisions and contents
   Pericardium: Thoracic Wall: position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise.

b) Respiratory system
   Outline of respiratory passages
   Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments
   Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm.
   Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.

Abdomen:
c) Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.

d) Large blood vessels of the gut

e) Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, gall bladder.

Pelvis:

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

Endocrine glands:

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

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

a) Anatomical positions of body, axes, planes, common anatomical terminologies (Groove, tuberosity, trochanters etc)

b) Connective tissue classification.

c) Bones- Composition & functions, classification and types according to morphology and development.

d) Joints-definition-classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints.

e) Muscles – origin, insertion, nerve supply and actions

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

   g) Lower Extremity
   b. Soft parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.

d) Trunk & Pelvis:
   d. Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs
e. Soft tissue: Pre and Para vertebral muscles, intercostals muscles, anterior abdominal wall muscles, Inter-vertebral disc.

f. Pelvic girdle and muscles of the pelvic floor

i) Head and Neck:

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

5. Neuro Anatomy

  a) Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system
  b) Cranial nerves
  c) Peripheral nervous system
     a. Peripheral nerve
     b. Neuromuscular junction
     c. Sensory end organs
  d) Central Nervous System
     a. Spinal segments and areas
     b. Brain Stem
     c. Cerebellum
     d. Inferior colliculi
     e. Superior Colliculi
     f. Thalamus
     g. Hypothalamus
     h. Corpus striatum
     i. Cerebral hemisphere
     j. Lateral ventricles
     k. Blood supply to brain
     l. Basal Ganglia
     m. The pyramidal system
     n. Pons, medulla, extra pyramidal systems
     o. Anatomical integration

PRACTICAL

List of Practical / Demonstrations *

Topics

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

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

**Recommended Textbooks:**

2. **B.D Chaurasia’s Human Anatomy – Regional And Applied; Volume I, Volume II And Volume III.**
8. **SINGH [Inderbir]**, Human Osteology. JP Brothers, New Delhi 1990, p191, Rs. 50/-

**Practicals**


**PHYSIOLOGY**

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 – 12 Months</td>
<td>210 Hrs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 Hrs</td>
<td>60 Hrs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Hours / Week</th>
<th>Lecture</th>
<th>Practicals</th>
<th>Seminars / Tutorials</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 Hrs</td>
<td>4 Hours / Week</td>
<td>2 Hours / Week</td>
<td>1 Hour / Week</td>
</tr>
</tbody>
</table>

24
Method of Assessment

: Written, Oral, Practical

Subject Description

The course in Physiology over the first year is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body.

The major topics covered include the following: the cell; primary tissue; connective tissue; skin; muscle; nervous tissue; blood; lymphoid tissues; respiration; blood vessels; circulation; cardiac cycle; systemic circulation; sensory receptors; special senses; motor unit; spinal cord; control of movement; hypothalamic functions; gastrointestinal tract; kidneys; uterus; urinary tract; pregnancy; endocrine system.

Practical classes include hematology experiments, clinical examinations, amphibian chart, and recommended demonstrations.

THEORY

General Physiology [2 Hours]

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

Blood [10 Hours]

- Introduction: Composition and functions of blood.
- Plasma: Composition, formation, functions. Plasma proteins.
- WBC: Classification. Morphology, functions, count, its variation of each. Immunity
- Platelets: Morphology, functions, count, its variations
- Blood Groups: Landsteiner’s law. Types, significance, determination, Erythroblastosis foetalis.
- Lymph: Composition, formation, circulation and functions.

Nerve Muscle Physiology [15 Hours]

- Neuroglia: Types and functions.


Cardiovascular System [20 Hours]

- Arterial pulse.
- Shock – Definition. Classification – causes and features
- Regional Circulation: Coronary, Cerebral and Cutaneous circulation.
- Cardiovascular changes during exercise.

Respiratory System [15 Hours]

- Dead Space: Types and their definition.
- Pulmonary Circulation. Ventilation-perfusion ratio and its importance.
- Disorders of Respiration: Dyspnoea. Orthopnoea. Hyperpnoea, hyperventilation, apnoea, tachypnoea, periodic breathing – types
- Artificial respiration
- Respiratory changes during exercise.

Digestive System [5 Hours]

- Introduction: Physiological anatomy and nerve supply of alimentary canal. Enteric nervous system
- Salivary Secretion: Saliva: Composition. Functions. Regulation. Mastication (in brief)
- Swallowing: Definition. Different stages. Functions.
• Pancreatic Secretion: Composition, production, function. Regulation.
• Intestine: Succus entericus: Composition, function and regulation of secretion. Intestinal motility and its function and regulation.
• Mechanism of Defaecation.

Renal System [ 8 Hours]

• Tubular Reabsorption: Reabsorption of Na⁺, glucose, HCO₃⁻, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: TmG. Renal threshold for glucose.
• Tubular Secretion: Secretion of H⁺ and K⁺. PAH clearance.
• Mechanism of concentrating and diluting the Urine: Counter-current mechanism. Regulation of water excretion. Diuresis. Diuretics.
• Acid-Base balance (very brief)
• Artificial Kidney: Principle of haemodialysis.
• Skin and temperature regulation.

Endocrine System [10 Hours]

• Pituitary-Hypothalamic Relationship.
• Thyroid Gland: Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxoedema, Cretinism, Grave’s disease.
• Calcitrol, Thymus and Pineal gland (very brief).
• Local Hormones.(briefly).
Reproductive System [5 Hours]


Special Senses [10 Hours]

- Visual Pathway and the effects of lesions.
- Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism.
- Vestibular Apparatus: Crista ampullaris and macula. Functions. Disorders

Nervous System [20 Hours]

- Spinal cord Lesions: Complete transection and Hemisection of the spinal cord.
- Cerebellum: Functions. Cerebellar ataxia.
• Posture and Equilibrium: Postural reflexes – spinal, medullary, midbrain and cerebral reflexes.
• Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome
• Reticular Formation and Limbic System: Components and Functions.
• Basal Ganglia: Structures included and functions. Parkinson’s disease.
• Cerebral Cortex: Lobes. Brodmann’s areas and their functions. Higher functions of cerebral cortex – learning, memory and speech.
• EEG : Waves and features. Sleep: REM and NREM sleep.
• ANS: Features and actions of parasympathetic and sympathetic nervous system.

Physiology of Exercise [15 Hours]
A. Effects of acute and chronic exercise on
1) O2 transport
2) Muscle strength/power/endurance
3) B.M.R./R.Q.
4) Hormonal and metabolic effect
5) Cardiovascular system
6) Respiratory system
7) Body fluids and electrolyte

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

C. Physiology of Age

Applied Physiology [15Hours]

More detailed study of the physiology and practical applications of the following selected topics with emphasis on aspects, which should help in understanding the nature and treatment of common clinical situations of interest in Physiotherapy.

a. Pulmonary Functions
2. Respiratory adjustments in exercises.
3. Artificial respiration

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

c. Muscles and Nervous System Functions
1. Peripheral nervous system, Neuromuscular transmission, Types of nerve fibres.
2. Action potential, Strength-duration curve, ECG, EMG, VEP, NCV
3. Degeneration and regeneration of nerve, Reactions of denervations.
4. Synaptic transmission, Stretch reflex- Mechanism and factors affecting it.
5. Posture, Balance and Equilibrium/Coordination of voluntary movement
6. Voluntary motor action, clonus, Rigidity, Discordination,
7. Special senses- Vision, taste, hearing, vestibular, Olfaction
8. Sympathetic and Parasympathetic regulation, Thermoregulation,

d. Blood functions
1. Thalassemia Syndrome, Hemophilia, VWF
2. Anemia, Leucocytosis
3. Bone marrow transplant

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

PRACTICAL

I. Haematology[ 20 Hours]

To be done by the students
1. Study of Microscope and its uses
2. Determination of RBC count
3. Determination of WBC count
4. Differential leukocyte count
5. Estimation of hemoglobin
6. Calculation of blood indices
7. Determination of blood groups
8. Determination of bleeding time
9. Determination of clotting time

Demonstrations only
1. Determination of ESR
2. Determination of PCV

II. Clinical Examination [20 Hours]

1. Examination of Radial pulse.
2. Recording of blood pressure
3. Examination of CVS
4. Examination of Respiratory system
5. Examination of Sensory system
6. Examination of Motor System
7. Examination of reflexes
8. Examination of cranial nerves

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

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

IV. Recommended Demonstrations [5 Hours]
1. Spirometry
2. Artificial Respiration
3. ECG
4. Perimetry
5. Mosso’s Ergometry

Recommended text books:

2. Concise medical physiology – Chaudhuri Sujit K.
3. Human Physiology – Chatterjee C.C.
6. Basics of Medical physiology- Venkatesh D & Sudhakar H H
7. Manipal Manual of Physiology – Prof. C N Chandrashekar

Reference:

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
<th>Theory</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOCHEMISTRY</td>
<td>: 0 – 12 Months</td>
<td>: 60 Hrs</td>
<td>: 60 Hrs / Week</td>
<td></td>
</tr>
</tbody>
</table>

THEORY

1. Nutrition [7 Hours]
   Introduction, Importance of nutrition
   Calorific values,
Respiratory quotient – Definition, and its significance
Energy requirement of a person -
Basal metabolic rate: Definition, Normal values, factor affecting BMR
Special dynamic action of food
Physical activities - Energy expenditure for various activities.
Calculation of energy requirement of a person
Balanced diet
Recommended dietary allowances
Role of carbohydrates in diet: Digestible carbohydrates and dietary fibers
Role of lipids in diet
Nutritional disorders

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

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

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

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

6. Nucleotide and Nucleic acid Chemistry [2 Hours]
Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body.
Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA, mRNA.

7. Digestion and Absorption [ 3 Hours]
General characteristics of digestion and absorption, Digestion and absorption of carbohydrates, proteins and lipids. Disorders of digestion and absorption – Lactose intolerance,

8. Carbohydrate Metabolism [ 5 Hours]
Introduction, Glycolysis – Aerobic, Anaerobic
Citric acid cycle, Substrate level phosphorylation
Glycogen metabolism – Glycogenesis, Glycogenolysis, Metabolic disorders glycogen,
Gluconeogenesis, Cori cycle
Hormonal regulation of glucose, Glycosuria, Diabetes mellitus,
9. Lipid Metabolism [5 Hours]
Introduction to lipid metabolism, Lipolysis, Oxidation of fatty acids β-oxidation of fatty acids, Lipogenesis - Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adipose tissues
Ketone body metabolism: Ketone body formation (ketogenesis), utilization (ketolysis), ketosis, Rothera’s test
Cholesterol metabolism: synthesis, degradation, cholesterol transport
Hypercholesterolemia and its effects (atherosclerosis and coronary heart diseases)
Hypocholesterolemic agents, Common hyperlipoproteinemia, Fatty liver

10. Amino acid and Protein Metabolism [3 Hours]
Catabolism of amino acids - Introduction, transamination, deamination, Fate of ammonia, transport of ammonia, Urea cycle
Specialized products formed from amino acids - from glycine, arginine, methionine, phenylalanine and tyrosine.

11. Vitamins [7 Hours]
Definition, classification according to solubility,
Individual vitamins - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity

12. Mineral Metabolism [2 Hours]
Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper. Phosphate, calcium and iron in detail

13. Cell Biology [2 Hours]
Introduction, Cell structure, Cell membrane structure and function, various types of absorption. Intracellular organelles and their functions, briefly on cytoskeleton

14. Muscle Contraction [2 Hours]
Contractile elements in muscle, briefly on the process of muscle contraction, Energy for muscle contraction.

15. Biochemistry of Connective tissue [2 Hours]
Introduction, various connective tissue proteins: Collagen, elastin - Structure and associated disorders. Glycoproteins, Proteoglycans

16 Hormone Action [2 Hours]
Definition, classification, Mechanism of hormone action. Receptors, signal transduction, second messengers and cell function

17 Acid-Base balance[2 Hours]
Acids, bases and buffers, pH. Buffer systems of the body, bicarbonate buffer system
Role of lungs and kidneys in acid base balance, Acid base imbalance

18 Water balance[1 Hour]
Water distribution in the body, Body water, water turnover, Regulation of water balance: role of ADH and thirst centre

19 Electrolyte balance[1 Hour]
Osmolarity. Distribution of electrolytes
Electrolyte balance: Role of aldosterone, rennin angiotensin system and ANF
20 Clinical Biochemistry [2 Hours]
Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate. Liver function tests, Renal function tests

Recommended Text Books

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

2. ORTEN [James M] and NEUHAUS [OHO.W], Human Biochemistry, Ed. 9, Mosby, St.Louis, 1975, p994.
4. DEVLIN [Thomas M], Biochemistry with Clinical Correalation, Ed. 4, Willey Libs, Ny, 1997, p1186, $30.95.

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOMECHANICS</td>
<td>0 – 12 Months</td>
<td>180</td>
</tr>
<tr>
<td>Theory</td>
<td>90 Hours</td>
<td></td>
</tr>
<tr>
<td>Practical</td>
<td>90 Hours</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Hours / Week</th>
<th>Lecture</th>
<th>2 Hours / Week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Practical</td>
<td>3 Hours / Week</td>
</tr>
<tr>
<td></td>
<td>Seminars / Tutorials</td>
<td>1 Hour / Week</td>
</tr>
</tbody>
</table>

| Method of Assessment | Written, Oral, Practical |

Course Description

Biomechanics involves the study of basic concepts of human movement, and application of various biomechanical principles in the evaluation and treatment of disorders of Musculoskeletal system. Students are taught to understand the various quantitative methods of movement. Mechanical principles of various treatment methods are studied. Study of posture and gait are also included.

THEORY

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

a) Types of Motion
b) Location of Motion
c) Direction of Motion
d) Magnitude of Motion
e) Definition of Forces
f) Force of Gravity
g) Reaction forces
h) Equilibrium
i) Objects in Motion
j) Force of friction
k) Concurrent force systems
l) Parallel force systems
m) Work
n) Moment arm of force
o) Force components
p) Equilibrium of levers

2. Joint structure and Function [ 3 Hours]
a) Joint design
b) Materials used in human joints
c) General properties of connective tissues
d) Human joint design
e) Joint function
f) Joint motion
g) General effects of disease, injury and immobilization.

3. Muscle structure and function [ 3 Hours]
a) Mobility and stability functions of muscles
b) Elements of muscle structure
c) Muscle function
d) Effects of immobilization, injury and aging

4. Biomechanics of the Thorax and Chest wall[ 4 Hrs]
a) General structure and function
b) Rib cage and the muscles associated with the rib cage
c) Ventilatory motions: its coordination and integration
d) Developmental aspects of structure and function
e) Changes in normal structure and function I relation to pregnancy, scoliosis and COPD

5. The Temperomandibular Joint [ 4 Hours]
a) General features, structure , function and dysfunction

6. Biomechanics of the vertebral column [10 Hours]
a) General structure and function
b) Regional structure and function – Cervical region, thoracic region, lumbar region, sacral region
c) Muscles of the vertebral column
d) General effects of injury and aging

7. Biomechanics of the peripheral joints [ 54 Hours]
a) The shoulder complex: Structure and components of the shoulder complex and their integrated function
b) The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury.
c) The wrist and hand complex: Structural components and functions of the wrist complex; structure of the hand complex; prehension; functional position of the the wrist and hand.
d) The hip complex: structure and function of the hip joint; hip joint pathology- arthrosis, fracture, bony abnormalities of the femur:
e) The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; effects of injury and disease.
f) The ankle and foot complex: structure and function of the ankle joint, subtalar joint, talocalcaneonavicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints, structure and function of the plantar arches, muscles of the ankle and foot, deviations from normal structure and function – Pes Planus and Pes Cavus

8. Analysis of Posture and Gait [9 Hours]: Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture, effects of posture on age, pregnancy, occupation and recreation; general features of gait, gait initiation, kinematics and kinetics of gait, energy requirements, kinematics and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running, effects of age, gender, assistive devices, disease, muscle weakness, paralysis, asymmetries of the lower extremities, injuries and malalignments in gait; Movement Analysis: ADL activities like sitting – to standing, lifting, various grips, pinches.

PRACTICAL: [90 Hours] shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait.

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

Recommended Textbooks:

Course description

Human Psychology involves the study of various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional and language development, communication and interaction skills appropriate to various age groups. Sociology will introduce student to the basic sociology concepts, principles and social process, social institutions [ in relation to the individual, family and community] and the various social factors affecting the family in rural and urban communities in India will be studied.

The study of these subjects will help the student to understand their clients while assessment and while planning appropriate treatment methods.

**PSYCHOLOGY**

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>: PSYCHOLOGY</td>
<td>: 0 – 12 Months</td>
<td>: 60</td>
</tr>
</tbody>
</table>

| Method of Assessment | : Written |

**THEORY**

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

2. Growth and Development (6 Hours)
   a. Life span: different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age).

3. Sensation, attention and perception (6 Hours)
   b. Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants)
   c. Perception: Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (past experience and context)
   d. Illusion and hallucination: different types

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

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

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

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

8. Thinking (4 Hours)
c. Creative thinking: steps in creative thinking, traits of creative people

9. Learning (8 Hours)
a. Factors effecting learning.
b. Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.
c. The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.

10. Personality (8 Hours)
a. Approaches to personality: type & trait, behavioristic, psychoanalytic and humanistic approach.
b. Personality assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques.

11. Social psychology (4 Hours)
a. Leadership: Different types of leaders. Different theoretical approaches to leadership.
b. Attitude: development of attitude. Change of attitude

Recommended text books:

THEORY

1. Introduction:
   1. Meaning - Definition and scope of sociology
   2. Its relation to Anthropology, Psychology, Social Psychology.
   3. Methods of Sociological investigations- Case study, social survey, questionnaire, Interview and opinion poll methods.
   4. Importance of its study with special reference to Health Care Professionals.

2. Social Factors in Health and disease situations:
   1. Meaning of social factors
   2. Role of social factors in health and illness

3. Socialization :
   1. Meaning and nature of socialization
   2. Primary, Secondary and Anticipatory socialization
   3. Agencies of socialization

4. Social Groups :
   1. Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation setup.

5. Family:
   1. The family, meaning and definitions.
   2. Functions of types of family
   3. Changing family patterns
   4. Influence of family on the individuals health, family and nutrition, the effects of sickness in the family and psychosomatic disease and their importance to physiotherapy.

6. Community :
   1. Rural community : Meaning and features –Health hazards of ruralities, health hazards to tribal community.
   2. Urban community : Meaning and features- Health hazards of urbanities.

7. Culture and Health :
   1. Concept of Health
2. Concept of Culture
3. Culture and Health
4. Culture and Health Disorders

8. Social change:
   1. Meaning of social changes.
   2. Factors of social changes.
   3. Human adaptation and social change
   5. Social change and deviance.
   6. Social change and health programme
   7. The role of social planning in the improvement of health and rehabilitation.

9. Social Problems of disabled:

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

   1. Population explosion
   2. Poverty and unemployment
   3. Beggary
   4. Juvenile delinquency
   5. Prostitution
   6. Alcoholism
   7. Problems of women in employment
   8. Geriatric problems

10. Social Security:

Social security and social legislation in relation to the disabled.

11. Social worker:
   1. Meaning of Social Work
   2. The role of a Medical Social Worker

Recommended Text Books

1. Sachdeva and Vidyabushan, Introduction to the study of sociology
2. INDRANI T K, Text Books of Sociology for Graduates Nurses and Physiotherapy Students, JP Brothers, New Delhi,10
## ENGLISH

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: ENGLISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 0 – 12 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 60</td>
</tr>
<tr>
<td>Theory</td>
<td>: 60 Hrs</td>
</tr>
<tr>
<td>Lecture</td>
<td>: 2 Hours / Week</td>
</tr>
</tbody>
</table>

| Method of Assessment | : Written, Oral |

Course description: This course is designed to help the student acquire a good command and comprehension of the English language through individual, papers and conferences.

### THEORY

#### Behavioural Objectives:
The student at the end of training is able to
1. Read and comprehend English language
2. Speak and write grammatically correct English
3. Appreciates the value of English literature in personal and professional life,

#### Unit – I:
Introduction:
Study Techniques
Organisation of effective note taking and logical processes of analysis and synthesis
The use of the dictionary
Enlargement of vocabulary
Effective diction

#### Unit - II:
Applied Grammar:
Correct usage
The structure of sentences
The structure of paragraphs
Enlargements of Vocabulary

#### Unit - III:
Written Composition:
Precise writing and summarising
Writing of bibliography
Enlargement of Vocabulary

#### Unit - IV:
Reading and comprehension
Review of selected materials and express oneself in one's words.
Enlargement of Vocabulary.

#### Unit - V
The Study of Various Forms of Composition Paragraph, Essay, Letter, Summary, Practice in
writing

Unit - VI
Verbal Communication:
Discussions and Summarization, Debates, Oral reports, use in teaching

Reference
2. Wren and Martin - Grammar and Composition, 1989, Chanda.& Co, Delhi
5. Journalism Made Simple , D Wainwright
6. Writers Basic Bookshelf Series, Writers Digest series
7. Interviewing by Joan Clayton Platkon

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: BASIC NURSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 0 – 12 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 30</td>
</tr>
<tr>
<td>Theory</td>
<td>: 20 Hours</td>
</tr>
<tr>
<td>Practical</td>
<td>: 10 Hours</td>
</tr>
<tr>
<td>Lecture + Practical</td>
<td>: 1 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment : Written, Oral,

THEORY

1. What is Nursing ? Nursing principles. Inter-Personnel relationships. Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.

2. Nursing Position: Environment safety; Bed making, prone, lateral, dorsal, dorsal recumbent, Flower's positions, comfort measures, Aids and rest and sleep.

3. Lifting and Transporting Patients : Lifting Patients up in the bed. Transferring from bed to wheel chair. "Transferring from bed to stretcher".


5. Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion

6. Care of Rubber Goods: Obervation, Reporting and Recording Temperature, Respiration and Pulse, Simple aseptic Technique, Sterilisation and Disinfection.

7. Surgical Dressing : Observation of dressing procedures

43
<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: KANNADA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 0 – 12 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 30</td>
</tr>
<tr>
<td>Theory</td>
<td>: 30 Hours</td>
</tr>
<tr>
<td>Lecture</td>
<td>: 1 Hours / Week</td>
</tr>
<tr>
<td>Method of Assessment</td>
<td>: Written, Oral</td>
</tr>
</tbody>
</table>


ಅನುದೃಢ : ೫.೦೦

ಭಾಗೀಕರಣ ಸಾಮರ್ಥ್ಯ

ಪ್ರತಿ : ಹೊಸಗುರಂ (ಹೊಸಂ) ಹೂಡಿ ಎಣ್ಣ
ಸಮತೆ : ೧೫ ಬೆಟ್ಟು (೧೫ರೂಪಿ ಬೆಟ್ಟು)

ಸ್ಥಾನಾವಧಿ: ದಿಂದಿನ್ನು/ದಿಂದಿನ್ನು ಸಂಯುಕ್ತ ಸ್ಥಳವುದ್ರವು
ಸಂಯುಕ್ತಾಯಾಯಿತು ಬಂದಿರುವು ಸಮಾಧಿಯನ್ನು ಅನುಭವಿಸಿದ್ದು
ಸಂಯುಕ್ತಾಯಿತು ಅದರು ಪ್ರತಿಕ್ರಿಯೆಯಲ್ಲಿ ಸಂವಿಧಾನ
ಸಂಬಂಧಿಸಿದ್ದು ಸಂಯುಕ್ತಾಯಿತು ಮೂಲಕ ಸಮರ್ಥ
ಪ್ರತಿಕ್ರಿಯೆಯಲ್ಲಿ ಸಂಯುಕ್ತಾಯಿತು ಅನುಭವಿಸಿದ್ದು.

ಭಾಗೀಕರಣ: 1. ಹೊಸಗುರಂ ಹೂಡಿ ಅನುಭವಿಸಿದ್ದು ಸಂಯುಕ್ತಾಯಿತು ಸಂಯುಕ್ತರಿಗೆ ಹೂಡಿ ಮಾಡಿಕೊಂಡಿ
2. ಹೂಡಿ ಅನುಭವಿಸಿದ್ದು ಸಂಯುಕ್ತರಿಗೆ ಹೂಡಿ ಮಾಡಿಕೊಂಡಿ.

ಆಹ್ವಾನಾಧಾರ

ಪ್ರತಿಪಡಿಸುವ ಪ್ರತಿಪಡಿಸುವ ಆಹ್ವಾನಾಧಾರ
(೧) ಸ್ಥಾನಾವಧಿ, ಸಮಾಧಿ, ಸ್ಥಳವು
(೨) ಸುತ್ತ, ಹೊಸಂ ವರ್ತನ, ಹೂಡಿ ವರ್ತನ, ದಿಂದಿನ್ನು ಬಂದಿರುವು
ಸಮತೆ : ಸಮಾಧಿಯನ್ನು (ಸಂಯುಕ್ತಾಯಿತು ಸಂಯುಕ್ತಾಯಿತು
ಸಂಯುಕ್ತಾಯಿತು ಸಂಯುಕ್ತಾಯಿತು ಸಂಯುಕ್ತಾಯಿತು)
ಸಂಯುಕ್ತಾಯಿತು : ಹೊಸಯಾದ ಸ್ಥಳವು ಹಾಗೂ ಸ್ಥಳವು
(೨) ಪ್ರತಿಕ್ರಿಯೆ ಪ್ರತಿಕ್ರಿಯೆ ಬಂದಿರುವು
(೨) ಪ್ರತಿಕ್ರಿಯೆ ಪ್ರತಿಕ್ರಿಯೆ ಪ್ರತಿಕ್ರಿಯೆ ಬಂದಿರುವು,
ಸಂಯುಕ್ತಾಯಿತು ಸಂಯುಕ್ತಾಯಿತು ಮೂಲಕ ಹೂಡಿ ಮಾಡಿಕೊಂಡಿ

ಪ್ರತಿಪಡಿಸುವ ಪ್ರತಿಪಡಿಸುವ ಆಹ್ವಾನಾಧಾರ

1. ಹೊಸಗುರಂ ಎಣ್ಣೆ (೮. ೯ ಹೂಡಿ, ೧೦ರೂಪಿ ಸಂಯುಕ್ತ ಸಂಯುಕ್ತಾಯಿತು ಸಂಯುಕ್ತಾಯಿತು)
2. ಸ್ಥಳವು ಎಣ್ಣೆ : ಎಣ್ಣೆ
3. ಹೂಡಿ ಎಣ್ಣೆ ಹೂಡಿ ಎಣ್ಣೆ : ಎಣ್ಣೆ ಮಾಡಿಕೊಂಡಿ, ಎಣ್ಣೆ
4. ಹೂಡಿ ಎಣ್ಣೆ : ಹೂಡಿ ಹೂಡಿ ಎಣ್ಣೆ
5. ಹೂಡಿ ಎಣ್ಣೆ ಎಣ್ಣೆ ಎಣ್ಣೆ ಎಣ್ಣೆ : ಎಣ್ಣೆ ಎಣ್ಣೆ, ಎಣ್ಣೆ
6. ಹೂಡಿ ಎಣ್ಣೆ ಎಣ್ಣೆ ಎಣ್ಣೆ ಎಣ್ಣೆ : ಎಣ್ಣೆ, ಎಣ್ಣೆ, ಎಣ್ಣೆ
ಕೆನ್ನೆ: ಅತ್ಯಂತ
ಎಲ್ಲಾಕ್ಕೂ ಪ್ರತ್ಯೇಕಿಸಿತವಿದೆ

ಎಲ್ಲಾ: ದೊಡ್ಡ ವಿದ್ಯಾಭ್ಯಾಸ (ವಿದ್ಯಾಲಯ) ಮತ್ತು ನಿಯಮ
ವಿದ್ಯಾಧಾರ: 15 ವಿದ್ಯಾರ್ಥಿಗಳು (ಬೀಜಗಳ ರೂಪವಿದೆ)

ಅಂಗುಲಿಗಳು: ಮೂರು ಎಲ್ಲಾ ಎಲ್ಲಾ ಶಾಲೆಗಳಲ್ಲಿ ಪ್ರತ್ಯೇಕಿಸಿತವಿದೆ:

ಪ್ರಮುಖ ವಿಧಾನ

ಪ್ರವೇಶ: ಎಲ್ಲಾ ಕೋಟೆಗಳಲ್ಲಿ ಮಾತ್ರ ಎಲ್ಲಾ ಶಾಲೆಗಳಲ್ಲಿ ಪ್ರತ್ಯೇಕಿಸಿತವಿದೆ.
 ಶಾಲೆಯಾದ್ಯವೇಂದರೆ ಮೂರು ಎಲ್ಲಾ
 ಶಾಲೆಯು ಶಾಲೆಯು ಶಾಲೆಯು (ಶಾಲೆಯು)
 ಶಾಲೆಯನ್ನು ಮಾತ್ರ, ಪ್ರತ್ಯೇಕಿಸಿತವಿದೆ ಎಲ್ಲಾ ಎಲ್ಲಾ

ಅಂತಾ: ಹೂಡಿತು ವಿಶ್ವವಿದ್ಯಾನಿಯಂ
ಅಂತಾ: ಹೂಡಿತು ಹೂಡಿತು
ಅಂತಾ: ಹೂಡಿತು ಹೂಡಿತು
ನೇರ್ಮ: ಮೂರು ಮೂರು ಮೂರು ಶಾಲೆಗಳಲ್ಲಿ ಪ್ರತ್ಯೇಕಿಸಿತವಿದೆ
ನೇರ್ಮ: ನೇರ್ಮ ನೇರ್ಮ ನೇರ್ಮ
ನೇರ್ಮ: ನೇರ್ಮ ನೇರ್ಮ ನೇರ್ಮ
ನೇರ್ಮ: ನೇರ್ಮ ನೇರ್ಮ ನೇರ್ಮ

ಅಂಗುಲಿಗಳು ಹೊಂದು ಪ್ರತ್ಯೇಕಿಸಿತವಿದೆ: ಗುರುತಿಸಿಟ್ಟು

1. ಅಂಗುಲಿಗಳು : ತಮ್ಮ ಶಾಲೆ ಅ.ಶ.
2. ಅಂಗುಲಿಗಳು : ತಮ್ಮ ಶಾಲೆ ಅ.ಶ.
3. ಅಂಗುಲಿಗಳು : ತಮ್ಮ ಶಾಲೆ ಅ.ಶ.
(ಸೊಸೈಟಿ ಸೊಸೈಟಿ ಸೊಸೈಟಿ)
4. ಅಂಗುಲಿಗಳು
5. ಅಂಗುಲಿಗಳು : ತಮ್ಮ ಶಾಲೆ ಅ.ಶ.
6. ಅಂಗುಲಿಗಳು : ತಮ್ಮ ಶಾಲೆ ಅ.ಶ.
(ಶಾಲೆಯಲ್ಲಿ ತಮ್ಮ ಶಾಲೆಯಲ್ಲಿ ನಿಂತು, ಪ್ರತ್ಯೇಕಿಸಿತವಿದೆ ಎಲ್ಲಾ ಎಲ್ಲಾ)
ORIENTATION TO PHYSIOTHERAPY

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: ORIENTATION TO PHYSIOTHERAPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 0 – 12 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 30</td>
</tr>
<tr>
<td>Theory</td>
<td>: 30 Hours</td>
</tr>
<tr>
<td>Lecture + Practical</td>
<td>: 1 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment : Written, Oral

THEORY

I  Patterns of Health Care Delivery:
   a. National Trends and resources
   b. Local trends and resources
   c. Overview of Health Science Professions

II Components of Physiotherapy Profession:
   a. History of Medical Therapeutics
   b. History of Physiotherapy
   c. Overview of Health Science Professions

III Role of Physiotherapy in meeting Health Care Needs in India.
   a. Needs versus Demands
   b. Physiotherapist as 'Educator'
   c. Typical Job settings
   d. Common problems and solutions
SECTION – 2
Second Year

PATHOLOGY & MICROBIOLOGY

Subject Description

This subject follows the basic subjects of Anatomy, Physiology and Biochemistry and it forms a vital link between preclinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases. Microbiology involves the study of common organisms causing diseases including nosocomial infections and precautionary measures to protect one from acquiring infections. The knowledge and understanding of Microbiology & Pathology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient. Particular effort is made in this course to avoid burdening the student.

PATHOLOGY

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>PATHOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>13 – 24 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>60</td>
</tr>
<tr>
<td>Theory</td>
<td>45 Hrs</td>
</tr>
<tr>
<td>Practical</td>
<td>15 Hrs</td>
</tr>
<tr>
<td>Lecture + Practical</td>
<td>2 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment: Written

Theory [45 Hours]

General Pathology

1. Introduction to Pathology [1 Hour]

2. Cell injuries: [3 Hours]


3. Inflammation and Repair [3 Hours]

Acute inflammation: features, causes, vascular and cellular events. Inflammatory cells and Mediators. Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.
Repair, Wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing.

4. Immunopathology [2 Hours]
   Immune system: General concepts.
   Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples.
   Secondary immunodeficiency including HIV infection. Auto-immune disorders: Basic concepts and classification, SLE.
   AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.

5. Infectious diseases [3 Hours]
   Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.
   Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery.
   Viral diseases: Poliomyelitis, Herpes, Rabies, Measles, Ricktsia, Chlamydial infection, HIV infection.
   Fungal disease and opportunistic infections.
   Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

6. Circulatory Disturbances [3 Hours]
   Hyperemia/Ischemia and Haemorrhage
   Edema: Pathogenesis and types.
   Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology
   Thrombosis and Embolism: Formation, Fate and Effects.
   Infarction: Types, Common sites.
   Shock: Pathogenesis, types, morphologic changes.

7. Growth Disturbances and Neoplasia [3 Hours]
   Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis, dysplasia.
   Precancerous lesions.
   Neoplasia: Definition, classification, Biological behaviour: Benign and Malignant, Carcinoma and Sarcoma.
   Malignant Neoplasia: Grades and Stages, Local & Distant spread.

8. Nutritional Disorders [1 Hour]
   Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples.

9. Genetic Disorders [1 Hour]
   Basic concepts of genetic disorders and some common examples and congenital malformation.
Systemic pathology

10. Hematology [4 Hours]
Constituents of blood and bone marrow, Regulation of hematopoiesis.
Anemia: Classification, clinical features & lab diagnosis.
Acquired hemolytic anemias
i. Alloimmune, Autoimmune
ii. Drug induced, Microangiopathic
Pancytopenia - Aplastic anemia.
Hemostatic disorders, Vascular and Platelet disorders & lab diagnosis.
Coagulopathies - (i) Inherited (ii) Acquired with lab diagnosis.

Leukocytic disorders: Leukocytosis, Leukopenis, Leukemoid reaction.

Leukemia: Classification, clinical manifestation, pathology and Diagnosis.
Multiple myeloma and disproteinemias.
Blood transfusion; Grouping and cross matching, untoward reactions, transmissible infections including HIV & hepatitis, Blood-components & plasma-pheresis.

11. Respiratory System [2 Hours]
Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases

12. Cardiovascular Pathology [2 Hours]
Congenital Heart disease: Atrial septal defect, Ventricular septal defect, Fallot's tetralogy, Patent ductus arteriosus.
Endocarditis.
Rheumatic Heart disease.
Ischemic heart Disease: Myocardial infarction.
Hypertension and hypertensive heart Disease.

13. Alimentary tract [3 Hours]
Oral Pathology: Ulcers, leukoplakia, Carcinoma, oral cavity diseases and tumour of salivary gland & esophagus and precancerous lesions, Esophagus inflammatory, functional disorders and tumours.
Stomach : Gastritis, Ulcer & Tumours.
Tumours and tumour like condition of the small and large Intestine: Polyps, carcinoid, carcinoma, Lymphoma.
Pancreatitis and pancreatic tumours : i) Exocrine, ii) Endocrine
Salivary gland tumours : Mixed, Warthin's

14. Hepato – biliary pathology [ 2 Hours]
Jaundice: Types, aetio-pathogenesis and diagnosis.
Hepatitis: Acute, Chronic, neonatal.
Alcoholic liver disease
Cirrhosis: Postnecrotic, Alcoholic, Metabolic and Portal hypertension Liver abscesses; Pyogenic,
parasitic and Amoebic.
Tumours of Liver

15. Lymphatic System [2 Hours]
Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma.
Lymphadenitis - Non specific and granulomatous
Causes of Splenic Enlargements.

16. Musculoskeletal System [3 Hours]
Osteomyelitis, acute, chronic, tuberculous, mycetoma
Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease.

17. Endocrine pathology [3 Hours]
Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis
Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Thyrotoxicosis, myxedema, Hashimoto's thyroiditis.

18. Neuropathology [3 Hours]
Inflammations and Infections : TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess
Tuberculosis, Cysticercosis
CNS Tumors, Astrocytoma, Neuroblastoma, Meningioma, Medulloblastoma

19. Dermatopathology [1 Hour]
Skin tumors : Squamos cell carcinoma, Basal cell carcinoma, Melanoma

Practical [15 Hours]
Demonstration of Slides – The students may be demonstrated the common histopathological, hematological and cytological slides and specimens and charts and their interpretations.

Recommended Textbooks

2. *General systemic pathology: Churchill Livingstone*
3. *Text book of Pathology: Robbins*
Theory

1. General Microbiology [5 Hours]

Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate.
Normal flora of the human body.
Routes of infection and spread; endogenous and exogenous infections; source at reservoir of infections.
Bacterial cell. Morphology limited to recognizing bacteria in clinical samples Shape, motility and arrangement. Structures, which are virulence, associated.
Physiology: Essentials of bacterial growth requirements.
Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection.
Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.

2. Immunology [5 Hours]

Basic principles of immunity immunobiology: lymphoid organs and tissues. Antigen, Antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.
Humoral immunity and its role in immunity Cell mediated immunity and its role in immunity.
Immunology of hypersensitivity, Measuring immune functions.

3. Bacteriology [12 Hours]

To be considered under the following headings
Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports

Staphylococci,
Streptococci and Pneumococci,
Mycobacteria: Tuberculosis, M.leprae, atypical mycobacteria,
Enterobacteriaceae,
Vibrios: V. cholerae and other medically important vibrios, Campylobacters and Helicobacters, Pseudomonas,
Bacillus anthracis,
Sporing and non-sporing anaerobes: Clostridia, Bacteroides and Fusobacteria,

4. General Virology [8 Hours]

5. Mycology [3 Hours]

6. Clinical/Applied Microbiology [12 Hours]
Streptococcal infections: Rheumatic fever and Rheumatic heart disease,
Meningitis,
Tuberculosis,
Pyrexia of unknown origin,
leprosy,
Sexually transmitted diseases,
Poliomyelitis,
Hepatitis,
Acute-respiratory infections,
Central nervous System infections,
Urinary tract infections,
Pelvic inflammatory disease,
Wound infection,
Opportunistic infections,
HIV infection,
Malaria,
Filariasi,
Zoonotic diseases.

Practical [15 Hours]
1. Demonstration of Microscopes and its uses
2. Principles, uses and demonstration of common sterilization equipment
3. Demonstration of common culture media
4. Demonstration of motility by hanging drops method
5. Demonstration of Gram Stain, ZN Stain
6. Demonstration of Serological test: ELISA
7. Demonstration of Fungus

Recommended Textbooks:
PHARMACOLOGY

Course Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: PHARMACOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 13 – 24 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 60 Hrs</td>
</tr>
<tr>
<td>Theory</td>
<td>: 60 Hrs</td>
</tr>
<tr>
<td>Lecture</td>
<td>: 2 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment: Written

1. General Pharmacology [5 Hours]

   Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.

2. Autonomic Nervous system [5 hours]


3. Cardiovascular Pharmacology [10 Hours]

   Drugs Used in the Treatment of Heart Failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators

54
Antiarrhythmic Drugs

Drugs Used in the Treatment of Vascular Disease and Tissue Ischemia: Vascular Disease, Hemostasis, Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics
Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers
Cerebral Ischemia
Peripheral Vascular Disease

4. Neuropharmacology [8 Hours]

Sedative-Hypnotic Drugs: Barbiturates, Benzodiazepines
Antianxiety Drugs: Benzodiazepines, Other Anxiolytics
Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium
Antipsychotic drugs

5. Disorders of Movement [6 Hours]

Drugs used in Treatment of Parkinson’s Disease
Antiepileptic Drugs
Spasticity and Skeletal Muscle Relaxants

6. Inflammatory/Immune Diseases [14 Hours]

Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Nonaspirin NSAIDs, drug Interactions with NSAIDs
Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids
Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout
Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythmatosus, Scleroderma, Demyelinating Disease
Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis

7. Digestion and Metabolism [6 Hours]

Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea
Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemics

8. Geriatrics [6 Hours]

Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension

Recommended Textbooks

1. Lippicott’s Pharmacology.
2. Essential of Medical Pharmacology by Tripathi
3. Text book of Medical Pharmacology by Padmaja udaykumar
EXERCISE THERAPY

Course Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>EXERCISE THERAPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>13 – 24 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>240</td>
</tr>
<tr>
<td>Theory</td>
<td>90 Hrs</td>
</tr>
<tr>
<td>Practical</td>
<td>150 Hrs</td>
</tr>
<tr>
<td>Total Hours / Week</td>
<td>8 Hrs</td>
</tr>
<tr>
<td>Lecture</td>
<td>2 Hours / Week</td>
</tr>
<tr>
<td>Practicals</td>
<td>5 Hours / Week</td>
</tr>
<tr>
<td>Seminars / Tutorials</td>
<td>1 Hour / Week</td>
</tr>
</tbody>
</table>

Method of Assessment : Written, Oral, Practical

Theory

1. Introduction to Exercise Therapy [3 Hours]

The aims of Exercise Therapy, The techniques of Exercise Therapy, Approach to patient’s problems, Assessment of patient’s condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment

2. Methods of Testing [15 Hours]

a) Functional tests

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

c) Tests for neuromuscular efficiency

- Electrical tests

56
• Anthropometric Measurements: Muscle girth – biceps, triceps, forearm, quadriceps, calf
• Static power Test
• Dynamic power Test
• Endurance test
• Speed test
d) Tests for Co-ordination
e) Tests for sensation
f) Pulmonary Function tests
g) Measurement of Limb Length: true limb length, apparent limb length, segmental limb length
h) Measurement of the angle of Pelvic Inclination

3. Relaxation [4 Hours]
Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation-Principles & uses: General, Local, Jacobson’s, Mitchel’s, additional methods.

4. Passive Movements [4 Hours]
Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements.

5. Active Movements [6 hours]
Definition of strength, power & work, endurance, muscle actions.
Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, muscle fiber type, motor unit, force gradation.
Causes of decreased muscle performance
Physiologic adaptation to training: Strength & Power, Endurance.

Types of active movements
Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses
Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses
Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses
Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses

Specific exercise regimens
Isotonic: de Lormes, Oxford, MacQueen, Circuit weight training
Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle Isometries
Isokinetic regimens
6. Proprioceptive Neuromuscular Facilitation [6 Hours]

Definitions & goals
Basic neurophysiologic principles of PNF: Muscular activity, Diagonals patterns of movement: upper limb, lower limb
Procedure: components of PNF

Techniques of facilitation
Mobility: Contract relax, Hold relax, Rhythmic initiation
Strengthening: Slow reversals, repeated contractions, timing for emphasis, rhythmic stabilization
Stability: Alternating isometric, rhythmic stabilization
Skill: timing for emphasis, resisted progression
Endurance: slow reversals, agonist reversal

7. Suspension Therapy [6 Hours]

Definition, principles, equipments & accessories, Indications & contraindications, Benefits of suspension therapy
Types of suspension therapy: axial, vertical, pendular
Techniques of suspension therapy for upper limb
Techniques of suspension therapy for lower limb

8. Functional Re-education [4 hours]

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

9. Aerobic Exercise [4 Hours]

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

10. Stretching [3 Hours]

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


Schools of Manual Therapy, Principles, Grades, Indications and Contraindications, Effects and Uses – Maitland, Kaltenborn, Mulligan
Biomechanical basis for mobilization, Effects of joint mobilisation, Indications and contraindicaitions, Grades of mobilization, Principles of mobilization, Techniques of mobilization for upper limb, lower limb, Precautions.

12. Balance [ 4 Hours]

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

13. Co-ordination Exercise [4 Hours]

Anatomy & Physiology of cerebellum with its pathways
Definitions: Co-ordination, Inco-ordination
Causes for Inco-ordination, Test for co-ordination: equilibrium test, non equilibrium test
Principles of co-ordination exercise
Frenkel’s Exercise: uses of Frenkel’s exercise, technique of Frenkel’s exercise, progression, home exercise.

14. Posture [3 Hours]

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

15. Walking Aids [3 hours]

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

16. Massage [4 Hours]

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

17. Hydrotherapy [3 Hours]

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

18. Individual and Group Exercises [3 Hours]

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

19. Introduction to Yoga [5 Hours]

Asanas – Principles and elements;
Pranayamas – Principles, Methods and Techniques

Practicals

The students of exercise therapy are to be trained in Practical Laboratory work for all the topics discussed in theory. The student must be able to evaluate and apply judiciously the different methods of exercise therapy techniques on the patients. They must be able to
1. Demonstrate the technique of measuring using goniometry
2. Demonstrate muscle strength using the principles and technique of MMT
3. Demonstrate the techniques for muscle strengthening based on MMT grading
4. Demonstrate the PNF techniques
5. Demonstrate exercises for training co-ordination – Frenkel’s exercise
6. Demonstrate the techniques of massage manipulations
7. Demonstrate techniques for functional re-education
8. Assess and train for using walking aids
9. Demonstrate mobilization of individual joint regions
10. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles
11. Demonstrate the techniques for muscle stretching
12. Assess and evaluate posture and gait
13. Demonstrate to apply the technique of passive movements
14. Demonstrate various techniques of Active movements
15. Demonstrate techniques of strengthening muscles using resisted exercises
16. Demonstrate techniques for measuring limb length and body circumference.

Recommended Textbooks

1. Therapeutic exercise by Barbara Bandy
2. Therapeutic exercise by Carolyn Kisner
3. Principles of exercise therapy by M. Dena Gardiner
4. Practical Exercise therapy by Hollis Margaret
5. Therapeutic exercise by Sydney Litch
6. Therapeutic exercise by Hall & Brody
7. Therapeutic exercise by Basmajian
8. Physical Rehabilitation by o’ Sullivan.
9. Therapeutic massage by Sinha
Course Description.

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>ELECTROTHERAPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>13 – 24 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>240</td>
</tr>
<tr>
<td>Theory</td>
<td>90 Hrs</td>
</tr>
<tr>
<td>Practical</td>
<td>150 Hrs</td>
</tr>
<tr>
<td>Total Hours / Week</td>
<td>8 Hrs</td>
</tr>
<tr>
<td>Lecture</td>
<td>2 Hours / Week</td>
</tr>
<tr>
<td>Practicals</td>
<td>5 Hours / Week</td>
</tr>
<tr>
<td>Seminars / Tutorials</td>
<td>1 Hour / Week</td>
</tr>
<tr>
<td>Method of Assessment</td>
<td>Written, Oral, Practical</td>
</tr>
</tbody>
</table>

Theory

Section I - Introductory Physics.

1. Electricity definition, types [1 Hour]

2. Static electricity [2 Hour]
   a. Production of electrical charges.
   b. Characteristics of charged body.
   c. Characteristics of lines of forces.
   d. Potential difference and EMG.

3. Current Electricity [5 Hour]
   a. Units of Electricity, faraday, volt, ampere, coulomb, watt.
   b. Resistance in series and parallel.
   c. Ohms law and its application to DC/AC.
   d. Fuse.
   e. Shock: Micro/ Macro shocks, safety precaution and management, earthing techniques & precautions.
   f. Burns: electrical & chemical burns, prevention and management.
g. Condensors: definition, principles, types construction, working and uses.

4. Magnetism: Definition, properties, electro-magnetic induction, electro- magnetic spectrum. [1 Hour]

5. Valves, transformers, types, principles, construction and working. [1 Hour]

6. Ionization: Principles, effects of various technique of medical ionization. [1 Hour]

Section II – Therapeutic Electricity

Section II A - Low frequency Currents

1. Basic types of current [1 Hour]

a. Direct Current: types, physiological & therapeutic effects.

b. Alternating Current

2. Types of Current used in Therapeutics [1 Hour]

Modified D.C
- Faradic Current
- Galvanic Current

Modified A.C
- Sinusoidal Current
- Diadynamic Current.

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

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

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

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

7. Ionization / Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, wound healing. [1 Hour]

8. Cathodal / Anodal galvanism. [1 Hour]

9. Micro Current & Macro Current [1 Hour]

10. Types of Electrical Stimulators [1 Hour]

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


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

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

Section II B - Electro-diagnosis

1. FG Test

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

3. Nerve conduction velocity studies [1 Hour]

4. EMG: Construction of EMG equipment.[1 Hour]

5. Bio-feed back.[1 Hour]

Section II C - Medium Frequency

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

2. Russian Current

3. Rebox type Current [1 Hour]

Section III - Thermo & Actinotherapy (High Frequency Currents)

1. Electro Magnetic Spectrum. [1 Hour]
2. SWD: Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters [8 Hours]

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

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


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


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

Section IV – Superficial heating Modalities

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

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

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

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

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

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

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

Practical

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

1. Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.
2. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
3. Demonstrate placement of electrodes for various electrotherapy modalities
4. Electrical stimulation for the muscles supplied by the peripheral nerves
5. Faradism under Pressure for UL and LL
6. Plotting of SD curve with chronaxie and rheobase
7. Demonstrate FG test
8. Application of Ultrasound for different regions-various methods of application
9. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
10. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose
11. Demonstrate treatment method using IFT for various regions
12. Calculation of dosage and technique of application of LASER
13. Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy
14. Demonstrate the treatment method using whirl pool bath
15. Winding up procedure after any electrotherapy treatment method

Recommended Textbooks

1. Claytons Electrotherapy by Forster & Plastangs
2. Electrotherapy Explained by Low & Reed
3. Clinical Electrotherapy by Nelson
4. Electrotherapy Evidene based practice by Sheila Kitchen
5. Physical agents by Michile Camreeon
6. Principles of Electrotherapy by Michile Camreeon
7. Thermal agents by Susan Michlovitz.
Course Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESEARCH METHODOLOGY &amp; BIOSTATISTICS</td>
<td>13 – 24 Months</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Hours / Week</td>
</tr>
<tr>
<td>Method of Assessment</td>
<td>: Written</td>
<td></td>
</tr>
</tbody>
</table>

RESEARCH METHODOLOGY [30 Hours]

1. Introduction to Research methodology: Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research, Problems encountered by researchers in India.

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

3. Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design

4. Sampling Design: Criteria for selecting sampling procedure, Implications for sample design, steps in sampling design, characteristics of good sample design, Different types of sample design


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

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

9. Testing of hypothesis: What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis

BIOSTATISTICS [30 Hours]

1. Introduction: Meaning, definition, characteristics of statistics., Importance of the study of statistics, Branches of statistics, Statistics and health science including physiotherapy, Parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Measurement scales.

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

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


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

6. Analysis of variance & covariance; Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Co variance(ANACOVA)

Recommended Textbooks:

1. Elements of Health Statistics: Rao.N.S.N
5. Elementary Statistics 1st Edn, 1990. in Medical Workers: Inderbir Singh
7. An Introduction to Gupta C.B. Statistical Methods, 1972: Ram Prasad & Sons
9. Research: Principles and Methods:L Denise F. Poli & Hungler
10. Fundamentals of Research, 4th Edn.: David J. fox
FIRST AID & CPR

Course Description

At the completion of this course the student of First Aid and CPR must be able to identify and manage situation of common emergencies.

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>13 – 24 Months</td>
<td>30</td>
</tr>
<tr>
<td>Practical</td>
<td>10 Hours</td>
<td>20 Hours</td>
</tr>
<tr>
<td>Lecture + Practical</td>
<td>1 Hour / Week</td>
<td>30</td>
</tr>
</tbody>
</table>

Method of Assessment: Written, Oral, Practical

1. Importance of First Aid in Physiotherapy.
2. Examination of Vital Signs
3. First Aid in cardiac arrest.
4. First Aid in Respiratory failure.
5. First Aid in Burns.
6. First Aid in Electric shock.
7. First Aid in Drowning.
8. First Aid in Spinal cord injuries.
10. First Aid in Poisoning
11. Instrumentation used in First Aid (First Aid kit).
12. First Aid in RTA.
13. Indication of CPR.
14. Assessment and technique of CPR.
15. Artificial ventilation.

Recommended Textbooks

4. *First aid & management of general injuries & common ailments-Gupta & Gupta*
CONSTITUTION OF INDIA

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
<th>Theory</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSTITUTION OF INDIA</td>
<td>13 – 24 Months</td>
<td>30</td>
<td>30</td>
<td>1 Hour / Week</td>
</tr>
</tbody>
</table>

Method of Assessment: Written

2. The democratic institution created by the Constitution Bicameral system of Legislature at the Centre and in the States.
3. Fundamental Rights and Duties…Their content and significance.
6. Doctrine of Separation of Powers-----Legislative, Executive and Judicial and their functioning in India.
7. The Election Commission and State Public Service Commissions.
9. Enforcing rights through Writs: Certiorari, Mandamus, Quo warranto and Habeas Corpus.
10. Constitution and Sustainable Development in India.

Recommended Textbooks:
INTRODUCTION TO TREATMENT

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>INTRODUCTION TO TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>13 – 24 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>30</td>
</tr>
<tr>
<td>Theory</td>
<td>30</td>
</tr>
<tr>
<td>Lecture</td>
<td>1 Hour / week</td>
</tr>
<tr>
<td>Method of Assessment</td>
<td>Written, Oral</td>
</tr>
</tbody>
</table>

2. General Information regarding Hospital wards, Patients hospital records and Functioning of department in patient management and departmental clinical units
   a. Physiotherapy OPD
   b. Neurological Physiotherapy
   c. Orthopedic Physiotherapy
   d. Developmental Pediatric Physiotherapy
   e. Cardio-Pulmonary Physiotherapy (ICU, NICU and Post-Op ICU, Wards)
   f. Health Fitness Physiotherapy- Obesity, Diabetic clinic, Life style modification clinic
   g. Geriatric Physiotherapy
   h. Industrial Physiotherapy and Ergonomics
   i. Community Physiotherapy
   j. Women’s Health Physiotherapy, Incontinence clinic

2. History taking, assessment, tests, Patient communication, documentation of findings, treatment organization and planning/execution for intervention.

3. Record keeping and information retrieval.

4. Techniques of use of electrotherapy equipments on patients, monitoring of dosages and winding up procedure.

5. Introduction about standardized tests and scales used in various types of cases for assessment and interpretation.

6. Exercise therapy treatment organization and methods of application on various types of cases
Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>GENERAL MEDICINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>25 – 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>60</td>
</tr>
<tr>
<td>Theory / Lecture</td>
<td>2 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment : Written


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


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

7. Cardiovascular Disease: Examination of the Cardiovascular System – Investigations: ECG, Exercise Stress Testing, Radiology; Clinical manifestations of Cardiovascular disease; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart: Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever – resulting in valve disorders, Ischemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest; Examination and Investigations of diseases of arteries and veins; Hypertension: Definition, causes, classification, types, assessment, investigations and management. [8 Hours]

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

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

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

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

Recommended books:

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

Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: GENERAL SURGERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 25 – 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 60</td>
</tr>
<tr>
<td>Theory / Lecture</td>
<td>: 2 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment : Written

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

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

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

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

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

Vessels; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and Insufficiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors. [6 Hours]


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

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


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

13. Ophthalmology: Ophthalmologic surgical conditions, refraction’s, conjunctivitis, glaucoma, corneal ulcer, iritis, cataract, retinitis, detachment of retina, defects of extra-ocular muscles-surgical management[3 Hours]

Recommended books:

1. General Surgical Operations – by Kirk / Williamson
2. Surgery by Nan
3. Bailey and Love’s – Short Practice of Surgery
Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
<th>Theory / Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORTHOPEDICS &amp; TRAUMATOLOGY</td>
<td>25 – 36 Months</td>
<td>60</td>
<td>2 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment : Written

1. Introduction [3 Hours]

2. Traumatology [3 Hours]

3. Fractures and Dislocations of Upper Limb [6 Hours]
   Fractures of Upper Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:


75
4. Fracture of Spine [4 Hours]


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

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

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

Fracture of Pelvis and Lower Limb - causes, clinical features, mechanism of injury, complications, conservative and surgical management of the following fractures:

Dislocations of Lower Limb - mechanism of injury, clinical features, complications, management of the following dislocations of lower limb.

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


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


10. Deformities [6 Hours] - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities.


11. Disease of Bones and Joints [4 Hours]: Causes, Clinical features, Complications, Management- medical and surgical of the following conditions :

- Infective conditions: Osteomyelitis (Acute / chronic). Brodie’s abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.
- Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.

12. Inflammatory and Degenerative Conditions [4 Hours]: causes, clinical feature, complications, deformities, radiological features, management- conservative and surgical for the following conditions:


Connective Tissue Disorders- Systemic Lupus Erythematosis, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)

13. Syndromes [3 Hours]: Causes, Clinical features, complications, management- conservative and surgical of the following:


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


15. Cervical and Lumbar Pathology [3 Hours]: Causes, clinical feature, patho-physiology, investigations, management-Medical and surgical for the following:


16. Orthopedic Surgeries [3 Hours]: Indications, Classification, Types, Principles of management of the following Surgeries:

Arthrodesis. Arthroplasty (partial and total replacement). Osteotomy, External fixators. Spinal stabilization surgeries(Harrington’s, Luque’s, Steffi plating) etc, Limb re-attachments.

17. Regional Conditions [4 Hours]: Definition, Clinical features and management of the following regional conditions
• Wrist and Hand: De Quervain’s Tenosynovitis. Ganglion. Trigger Finger/ Thumb. Mallet Finger, Carpal Tunnel Syndrome, Dupuytren’s Contracture.

Books Recommended:

4. Apley’s Orthopedics.
5. Textbook of Orthopedics and Traumatology— M.N.Natarajan
Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Duration</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ORTHOPEDICS AND SPORTS PHYSIOTHERAPY</td>
<td>25 – 36 Months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
</tr>
<tr>
<td>Theory</td>
<td></td>
<td>90 Hours</td>
</tr>
<tr>
<td>Practical</td>
<td></td>
<td>60 Hours</td>
</tr>
</tbody>
</table>

| Total Hours / Week | Lecture | 5 Hrs |
|                   |         | 3 Hours / Week |
|                   | Practical | 2 Hours / Week |

| Method of Assessment | Written, Oral, Practical |

1. PT assessment for Orthopedic conditions - SOAP format. Subjective - history taking, informed consent, personal, past, medical and socioeconomic history, chief complaints, history of present illness. Pain assessment- intensity, character, aggravating and relieving factors, site and location. Objective- on observation - body built swelling, muscle atrophy, deformities, posture and gait. On palpation- tenderness-grades, muscle spasm, swelling-methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances. On examination – ROM – active and passive, resisted isometric tests, limb length-apparent, true and segmental, girth measurement, muscle length testing-tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination-dermatomes, myotomes and reflexes, special tests and functional tests. Prescription of home program. Documentation of case records, and follow up. [5 Hours]


including pelvis. PT assessment and management spinal fractures. [6 Hours]

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

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

6. Degenerative and Inflammatory conditions: Definition, signs and symptoms, clinical features, path physiology, radiological features, deformities, medical, surgical management. Describe the PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritic shoulder. [3 Hours]

7. Infective conditions: Definition, signs and symptoms, clinical features, pathophysiologys, radiological features, medical, surgical management. Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, Pyogenic arthritis, TB spine and major joints - knee and hip. [2 Hours]

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

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

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

11. Poliomyelitis: Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management. PT assessment and management after surgical corrections and reconstructive surgeries - emphasis on tendon transfer and home program. [2 Hours]

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

13. Amputations: Definition, levels, indications, types, PT assessment, aims, management pre and post operatively. PT management with emphasis on stump care and bandaging. Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management. [3 Hours]

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

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

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

17. Orthopedic surgeries: Pre and post operative PT assessment, goals, precautions and PT management of following surgeries such as : Arthrodesis, Osteotomy, Arthroplasty-partial and total - Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and total replacement; Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re-attachment of limbs, External fixators, Synovectomy. [4 Hours]


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

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

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


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

24. Introduction to Bio-Engineering; Classification of Orthoses and prostheses; Biomechanical principles of orthotic and prosthetic application; Designing of upper extremity, lower extremity and spinal orthosis, indications and check out; Designing of upper extremity and lower extremity prostheses, indications and check out; Psychological aspects of orthotic and prosthetic application; prescription and designing of footwear and modifications; Designing and construction of adaptive devises. [9 Hours]


26. Applied Yoga in orthopedic conditions [3 Hours]
Practical: 60 Hours

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

1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Recommended books:

1. Tidy's physiotherapy.
2. Textbook of orthopedics- Cash.
3. Clinical orthopedic rehabilitation- Brotzman.
4. Orthopedic physiotherapy - Jayant Joshi.
5. Physical Rehabilitation Assessment and Treatment – O’Sullivan Schmitz
6. Sports physiotherapy- Maria Zuluaga
Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>CARDIO-RESPIRATORY &amp; GENERAL PHYSIOTHERAPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>25 – 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>150</td>
</tr>
<tr>
<td>Theory</td>
<td>90 Hours</td>
</tr>
<tr>
<td>Practical</td>
<td>60 Hours</td>
</tr>
<tr>
<td>Total Hours / Week</td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>5 Hrs</td>
</tr>
<tr>
<td>Practicals</td>
<td>3 Hours / Week</td>
</tr>
<tr>
<td></td>
<td>2 Hours / Week</td>
</tr>
<tr>
<td>Method of Assessment</td>
<td>Written, Oral, Practical</td>
</tr>
</tbody>
</table>

Theory: 90 Hours

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

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

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

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

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


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

8. Management of wound ulcers- Care of ulcers and wounds - Care of surgical scars-U.V.R and other electro therapeutics for healing of wounds, prevention of Hypergranulated Scars Keoloids, Electrotherapeutics measures for relief of pain during mobilization of scars tissues. [2 Hours]

9. Physiotherapy in dermatology -Document of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhydrosis. Massage maneuvers for cosmetic purpose of skin; use of specific oil as medium; Care of anesthetic hand and foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices [2 Hours]

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

11. Physiotherapy in Obstructive lung conditions [2 Hours]

12. Physiotherapy in Restrictive lung conditions [2 hours]

13. Management of breathlessness [2 hours]

14. Pulmonary Rehabilitation [4 Hours]

15. Physiotherapy following Lung surgeries [3 Hours]

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

17. Introduction to ICU : ICU monitoring –Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU[4 Hours]

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

19. Physiotherapy management following cardiac surgeries [3 Hours]

20. Cardiac Rehabilitation [4 Hours]

21. Physiotherapy management following PVD [3 Hours]

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

23. Management of Amputations following Diabetes, PVD - Prosthesis in amputations of lower limbs following ulcers and gangrenes [3 Hours]
24. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases [3 Hours]

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

26. Physiotherapy in Obstetrics – Antenatal Care, Antenatal Education, Postnatal Care. Electrotherapy and Exercise Therapy measures for the re-education of Ano-Urethral sphincters. [3 Hours]

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


29. Applied Yoga in Cardio-respiratory conditions [3 Hours]

Practical: 60 Hours

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

1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
3. The Brompton Guide to chest physiotherapy DU Gasket [Completed]
4. Physical Rehabilitation Assessment and Treatment – O’Sullivan Schmitz
5. Elements in Pediatric Physiotherapy – Pamela M Eckersley
6. Essentials of Cardio Pulmonary Physical Therapy by Hillegass and Sadowsky
7. Cardio pulmonary Symptoms in physical Therapy practice Cohen and Michel
8. Chest Physiotherapy in Intensive Care Unit by Mackenzi
10. Physiotherapy in Psychiatry
11. Physical Therapy for the Cancer patient by M.C Garvey
12. Physiotherapy in Obstetrics and Gynecology by Polden
ALLIED THERAPIES

Subject Description

The Subject is designed to provide an overview in the basics of Occupational Therapy, Speech and Language Therapy and Alternative Medicine. This will help the student to make decisions during the course of patient evaluation to refer to the concerned specialist for a required therapy.

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>ALLIED THERAPIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>25 - 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>60</td>
</tr>
<tr>
<td>Theory</td>
<td>60</td>
</tr>
<tr>
<td>Lecture</td>
<td>2 Hour / week</td>
</tr>
</tbody>
</table>

| Method of Assessment | Written |

Basic Occupational Therapy
1. Introduction to Occupational Therapy
2. Principles of Occupational Therapy
3. Human Structure and Function in Occupational Therapy
4. Therapeutic Media in Occupational Therapy
5. Therapeutic Modalities in Occupational Therapy
6. Health Care Management in Occupational Therapy
7. Pathophysiology in Occupational Therapy
8. Mental Health in Occupational Therapy
9. Physical Function in Occupational Therapy

Basic Speech Therapy
1. Anatomy and Physiology of the Organs of Language
2. Introduction to Audiology
3. Neurological Basis of Language, Linguistics, Phonetics and Phonology
4. Introduction to Language Disorders
5. Speech Therapy Intervention in Language Development Disorders, Aphasia, Speech Articulation Disorders, Deafness
6. Dyslexias and dysgraphias
7. Stuttering
8. Alternative Systems of Communication
9. Intervention in autism and Psychopathological Disorders
10. Intervention in Basic Language, Psychomotor Development
11. New Educational Methodologies for Children with Auditory Alterations
12. Technology Applied to Speech Processing
13. Speech Therapy Intervention in Cochlear Implantation

Alternative Medicine
1. Accupuncture : Definitions, Principles, Techniques, Physiological and Therapeutic effects, Indications and Contra indications.
2. Introduction to Naturotherapy – Principles of application ,Indications and Uses.
4. Yogasanas and their scientific studies.
5. Role of the above Alternative Medicine approaches including Yoga in comprehensive rehabilitation of patients.
Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision.

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

Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>NEUROLOGY &amp; NEUROSURGERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>25 – 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>60</td>
</tr>
<tr>
<td>Theory / Lecture</td>
<td>2 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment: Written

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

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

3. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system. [3 hours]

4. Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV. [3 hours]

5. Neuro-ophthalmology: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement. [1 hour]

6. Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo. [2 hours]

7. Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell’s palsy, hemi facial spasm, Glossopharangial neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve. Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia. [3 hours]

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


12. Cerebellar and coordination disorders: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich’s ataxia, Ataxia talengiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis. [3 hours]


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


17. Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications. [2 hours]
18. Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism. [2 hours]

19. Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia. [3 hours]


22. Paediatric neurology: Neural development, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplasia, Cerebral malformations, Autism, Dandy walker syndrome and Down’s syndrome. [3 hours]


Recommended books:
7. Davidson’s Principles and Practice of Medicine
8. Textbook of Neurology- Victor Adams
10. Illustrated Neurology & Neurosurgery
11. Brains Diseases of Nervous System
Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>NEURO-PHYSIOTHERAPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>25 – 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>150</td>
</tr>
<tr>
<td>Theory</td>
<td>90 Hours</td>
</tr>
<tr>
<td>Practical</td>
<td>60 Hours</td>
</tr>
</tbody>
</table>

| Total Hours / Week | 5 Hrs |
| Lecture           | 3 Hours / Week |
| Practicals        | 2 Hours / Week |

Method of Assessment: Written, Oral, Practical


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

Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down’s Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia. [14 hours]


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

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

9. Applied Yoga in Neurological conditions [3 Hours]

Practical: 60 Hours
Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

3. Bedside case presentations and case discussions
4. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions.

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Textbook of Neurology for Physiotherapists
3. Neurological Rehabilitation by D Umphred
4. Physical Rehabilitation Assessment and Treatment – O’Sullivan Schmitz
5. Elements of Pediatric Physiotherapy-Eckersley
Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: COMMUNITY MEDICINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 25 – 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 60</td>
</tr>
<tr>
<td>Theory / Lecture</td>
<td>: 2 Hours / Week</td>
</tr>
<tr>
<td>Method of Assessment</td>
<td>: Written</td>
</tr>
</tbody>
</table>


2. Epidemiology, definition and scope. Principles of Epidemiology and Epidemiological methods: Components and Aims, Basic measurements, Methods, Uses of Epidemiology, Infectious disease epidemiology, Dynamics and modes of disease transmission, Host defenses and Immunizing agents, Hazards of Immunization, Disease prevention and control, Disinfection. Screening for Disease: Concept of screening, Aims and Objectives, Uses and types of screening. [7 hours]

3. Epidemiology of communicable disease: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonoses, Surface infections, Hospital acquired infections Epidemiology of chronic non-communicable diseases and conditions: Cardio vascular diseases: Coronary heart disease, Hypertension, Stroke, Rheumatic heart disease, Cancer, Diabetes, Obesity, Blindness, Accidents and Injuries. [7 hours]

4. Public health administration- an overview of the health administration set up at Central and state levels. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programmes. Health problems of vulnerable groups- pregnant and lactating women, infants and pre-school children, occupational groups [4 hours]

6. Demography and Family Planning: Demographic cycle, Fertility, Family planning- objectives of national family planning programme and family planning methods, A general idea of advantage and disadvantages of the methods. [3 hours]

7. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics: MCH problems, Antenatal, Intranatal and post natal care, Care of children, Child health problems, Rights of child and National policy for children, MCH services and indicators of MCH care, Social welfare programmes for women and children, Preventive medicine and geriatrics. [6 hours]

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

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

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

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


13. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Causes of mental ill health, Prevention, Mental health services, Alcohol and drug dependence. Emphasis on community aspects of mental health. Role of Physiotherapist in mental health problems such as mental retardation. [3 hours]


Recommended books:

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

Subject Description

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

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: COMMUNITY BASED REHABILITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 25 – 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 150</td>
</tr>
<tr>
<td>Theory</td>
<td>: 90 Hours</td>
</tr>
<tr>
<td>Practical</td>
<td>: 60 Hours</td>
</tr>
<tr>
<td>Total Hours / Week</td>
<td>: 5 Hrs</td>
</tr>
<tr>
<td>Lecture</td>
<td>: 3 Hours / Week</td>
</tr>
<tr>
<td>Practicals</td>
<td>: 2 Hours / Week</td>
</tr>
</tbody>
</table>

Method of Assessment : Written, Oral, Practical

1. Rehabilitation: Definition, Types [1 hour]

2. Community: Definition of Community, Multiplicity of Communities, The Community based approach, Community Entry strategies, CBR and Community development, Community initiated versus community oriented programme, Community participation and mobilization [5 hours]

3. Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR [6 hours]


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

of disabilities- Types and levels [6 hours]

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


9. Role of Social work in CBR: Definition of social work, Methods of social work, History of social work, Role of social worker in rehabilitation [4 hours]


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

12. Role of Physiotherapy in CBR: Screening for disabilities, Prescribing exercise programme, Prescribing and devising low cost locally available assisstive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation programmes for various neuromusculoskeletal and cardiothoracic disabilities. [5 hours]

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

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

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


17. Industrial Health & Ergonomics [10 hours] - Occupational Hazards in the industrial area -- Accidents due to
   1. Physical agents-e.g.-Heat/cold, light, noise, Vibration, U.V. radiation, Ionizing radiation,
   2. Chemical agents-Inhalation, local action, ingestion,
   3. Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of work place-mechanical stresses per hierarchy – i. sedentary table work –executives, clerk,
      ii. inappropriate seating arrangement- vehicle drivers
      iii. constant standing- watchman- Defense forces, surgeons,
      iv. Over-exertion in laborers,-common accidents –Role of P.T.-Stress management,
   4. Psychological hazards- e.g.-executives, monotonicity & dissatisfaction in job, anxiety of work completion with quality, Role of P.T. in Industrial setup & Stress management-relaxation modes.
5. Biological Hazards

Practical: 60 Hours

This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio-respiratory, paediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

Recommended books:

1. Rehabilitation Medicine by Howard A Rusk.
2. Rehabilitation Medicine by Joel A De lisa
ETHICS

1. History of physiotherapy, Ethical principles in health care, Ethical principles related to physiotherapy, Scope of practice, Enforcing standards in health profession-promoting quality care, Professional ethics in research, education and patient care delivery, Informed consent issues, Medical ethics and Economics in clinical decision-making. [3 hours]

2. Rules of professional conduct [2 hours]
   - Physiotherapy as a profession
   - Relationship with patients
   - Relationship with health care institutions
   - Relationship with colleagues and peers
   - Relationship with medical and other professional.

3. Confidentiality and Responsibility, Malpractice and negligence, Provision of services and, advertising,
   Legal aspects: Consumer protection act, Legal responsibility of physiotherapist for their action in professional context and understanding liability and obligations in case of medico-legal action [2 hours]

4. IAP - Memorandum Of Association & Rules And Regulations [3 hours]

ADMINISTRATION AND SUPERVISION

1. Introduction: Branches of administration, Nature and scope of administration, How to be an effective administrator, Planning hospital administration as part of a balanced health care program. [2 hours]

2. Principles of hospital administration and its applications to physiotherapy. [2 hours]


4. Financial issues including budget and income generation [2 hours]

5. Hospital administration: Organization, Staffing, Information, Communication, Coordination, Cost of services, Monitoring and evaluation. [2 hours]
6. National health policy and health care system in India [2 hours]

7. Organization of physiotherapy department: Planning, Space, Manpower, Other basic resources. [2 hours]

8. Organizing meetings, committees, and negotiations [1 hour]

9. Personnel management: Personnel performance appraisal system, Quality care delivery from the staff [2 hours]

10. Material management [1 hour]
    • Pharmacy
    • Hospital waste disposal

11. Quality assurance [1 hours]
    • Hospital acquired infection
    • Quality assurance through record review and medical audit.

12. Public relations in hospital and human resource management. [1 hours]

Recommended books:

1. Medical Ethics by C M Francis.
2. George V Lobo – Current Problems in Medical Ethics
4. Francis C M – Hospital Administration
5. Davies, R and Macaulay, BMC – Hospital Planning and Administration
1. Introduction to Evidence Based Practice: Definitions, Evidence Based Practice, Evidence Based Physiotherapy Practice [3 hours]

2. Concepts of Evidence based Physiotherapy: Awareness, Consultation, Judgement, Creativity [1 hours]

3. Development of Evidence based knowledge, The Individual Professional, Professionals within a discipline, Professionals across disciplines [2 hours]

4. Evidence Based Practitioner: The Reflective Practitioner, The E Model, Using the E Model [1 hours]

5. Finding the Evidence: Measuring outcomes in Evidence Based Practice, Measuring Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation [3 hours]


7. Assessing the Evidence: Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurements, Biostatistics, The critical review of research using qualitative methods [4 hours]

8. Systematically reviewing the evidence: Stages of systematic reviews, Meta analysis, The Cochrane collaboration [3 hours]

9. Economic evaluation of the evidence: Types of economic evaluation, Conducting economic evaluation, Critically reviewing economic evaluation, Locating economic evaluation in the literature [2 hours]

10. Using the evidence: Building evidence in practice; Critically Appraised Topics (CATs), CAT format, Using CATs, Drawbacks of CATs [2 hours]


12. Communicating evidence to clients, managers and funders: Effectively communicating evidence, Evidence based communication in the face of uncertainty, Evidence based
communication opportunities in everyday practice [2 hours]

13. Research dissemination and transfer of knowledge: Models of research transfer, Concrete research transfer strategies, Evidence based policy [2 hours]

Recommended books:

1. Evidence-Based Practice in Nursing and Health Care: A Guide to Best Practice, by Bernadette Melnyk (Editor), Ellen Fineout-Overholt (Editor)
2. Evidence-Based Rehabilitation: A Guide to Practice, by Mary Law
3. Achieving Evidence-Based Practice, by Susan Hamer, BA, MA, RGN, FETC(DIST),
4. The Evidence-Based Practice by Stout, Randy A Hayes

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>: PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>: 25 – 36 Months</td>
</tr>
<tr>
<td>Total Hours</td>
<td>: 60</td>
</tr>
</tbody>
</table>

Method of Assessment : Oral, Practical

Project will be a clinical assignment on given topic or condition. This may be done in the form of a literature review. This will give the student a background on research methods and recent advances.

| Duration      | : 25 - 36 Months |
| Total Hours   | : 540 |

Method of Assessment : Oral, Practical

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

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

**APPENDIX – I - SPECIFICATIONS FOR ANATOMY THEORY AND PRACTICALS**

<table>
<thead>
<tr>
<th>A</th>
<th>THEORY</th>
<th>MAXIMUM MARKS</th>
<th>NUMBER OF QUESTIONS</th>
<th>MAXIMUM MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WRITTEN PAPER</td>
<td>100</td>
<td>ESSAY</td>
<td>MUSCULOSKELETAL ANATOMY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>REGIONAL ANATOMY - CVS, RESPIRATORY SYSTEM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NEURO ANATOMY</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SHORT ESSAY</td>
<td>MUSCULOSKELETAL ANATOMY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>REGIONAL ANATOMY</td>
<td>NEURO ANATOMY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SHORT ANSWER</td>
<td>MUSCULOSKELETAL ANATOMY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>REGIONAL ANATOMY</td>
<td>NEURO ANATOMY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EMBRYOLOGY</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HISTOLOGY</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>VIVA VOCE</td>
<td>30</td>
<td></td>
<td>OSTEIOLOGY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SOFT PARTS</td>
</tr>
<tr>
<td>3</td>
<td>INTERNAL ASSESSMENT THEORY</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL THEORY 150**

<table>
<thead>
<tr>
<th>B</th>
<th>PRACTICAL</th>
<th>MAXIMUM MARKS</th>
<th>NUMBER OF QUESTIONS</th>
<th>MAXIMUM MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PRACTICAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HISTOLOGY SPOTTERS</td>
<td>10</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>GROSS SPOTTERS: IDENTIFICATION OF STRUCTURES IN A GIVEN SPECIMEN,</td>
<td>10</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>DISCUSSION ON ANY TWO DISSECTED SPECIMENS- a) ABOVE DIAPHRAGM</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) BELOW DIAPHRAGM</td>
<td></td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>SURFACE ANATOMY</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>INTERNAL ASSESSMENT PRACTICAL</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>TOTAL PRACTICAL</td>
<td>50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX – II - SPECIFICATIONS FOR PHYSIOLOGY THEORY AND PRACTICALS

### A. THEORY

<table>
<thead>
<tr>
<th>Number</th>
<th>Type of Paper</th>
<th>Maximum Marks</th>
<th>Number of Questions</th>
<th>Maximum Marks for Each Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WRITTEN PAPER</td>
<td>100</td>
<td>ESSAY</td>
<td>NERVE MUSCLE PHYSIOLOGY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CARDIO VASCULAR SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RESPIRATORY SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NERVOUS SYSTEM</td>
</tr>
<tr>
<td>2</td>
<td>SHORT ESSAY</td>
<td>5</td>
<td></td>
<td>BLOOD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NERVE MUSCLE PHYSIOLOGY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CARDIO VASCULAR SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RESPIRATORY SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DIGESTIVE SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RENAL SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ENDOCRINE SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>REPRODUCTIVE SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SPECIAL SENSES</td>
</tr>
<tr>
<td>3</td>
<td>SHORT ANSWER</td>
<td>10</td>
<td></td>
<td>GENERAL PHYSIOLOGY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BLOOD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DIGESTIVE SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RENAL SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ENDOCRINE SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>REPRODUCTIVE SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SPECIAL SENSES</td>
</tr>
<tr>
<td>4</td>
<td>VIVA VOCE</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>INTERNAL ASSESSMENT THEORY</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>TOTAL THEORY</td>
<td>150</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### B. PRACTICAL

<table>
<thead>
<tr>
<th>Number</th>
<th>Type of Practical</th>
<th>Maximum Marks</th>
<th>Number of Questions</th>
<th>Maximum Marks for Each Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PRACTICAL</td>
<td>10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>HEMATOLOGY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CLINICAL EXAMINATION</td>
<td>15</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>AMPHIBIAN CHARTS</td>
<td>10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>INTERPRETATION OF CALCULATION OF A GIVEN PROBLEM</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>INTERNAL ASSESSMENT PRACTICAL</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>TOTAL PRACTICAL</td>
<td>50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

104
# APPENDIX – III - SPECIFICATIONS FOR BIOMECHANICS THEORY AND PRACTICALS

<table>
<thead>
<tr>
<th></th>
<th>MAXIMUM MARKS</th>
<th>NUMBER OF QUESTIONS</th>
<th>MAXIMUM MARKS FOR EACH QUESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td><strong>THEORY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>WRITTEN PAPER</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ESSAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ANALYSIS OF POSTURE AND GAIT</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICS OF PERIPHERAL JOINTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICS OF THE VERTEBRAL COLUMN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>JOINT STRUCTURE AND FUNCTION</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>MUSCLE STRUCTURE AND FUNCTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICS OF THE THORAX AND CHEST WALL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TEMPEROMANDIBULAR JOINT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICS OF THE VERTEBRAL COLUMN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICS OF THE PERIPHERAL JOINTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ANALYSIS OF POSTURE AND GAIT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SHORT ANSWER</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BASIC CONCEPTS IN BIOMECHANICS</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>JOINT STRUCTURE AND FUNCTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MUSCLE STRUCTURE AND FUNCTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICS OF THE THORAX AND CHEST WALL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TEMPEROMANDIBULAR JOINT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICS OF THE VERTEBRAL COLUMN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIOMECHANICS OF THE PERIPHERAL JOINTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ANALYSIS OF POSTURE AND GAIT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>VIVA VOCE</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>INTERNAL ASSESSMENT THEORY</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL THEORY</strong></td>
<td><strong>150</strong></td>
<td></td>
</tr>
</tbody>
</table>
Please Note: Biomechanics Practicals: Practicals shall be conducted for various joint movements and analysis of the same. The student shall be asked to analyse or demonstrate for activities of daily living – ADL – (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur. The demonstrations may be done on models or skeleton.

APPENDIX – IV - SUBSIDIARY SUBJECTS - DISTRIBUTION OF MARKS

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Subject</th>
<th>Theory</th>
<th>Viva-Voce</th>
<th>Practicals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Maximum Marks</td>
<td>Maximum Marks</td>
<td>Maximum Marks</td>
<td>Maximum Marks</td>
</tr>
<tr>
<td>1.</td>
<td>English</td>
<td>80</td>
<td>20</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Kannada</td>
<td>80</td>
<td>20</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>3.</td>
<td>Basic Nursing</td>
<td>40</td>
<td>10</td>
<td>-</td>
<td>50</td>
</tr>
<tr>
<td>4.</td>
<td>Orientation to Physiotherapy</td>
<td>40</td>
<td>10</td>
<td>-</td>
<td>50</td>
</tr>
<tr>
<td>5.</td>
<td>First Aid &amp; CPR</td>
<td>40</td>
<td>10</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>6.</td>
<td>Constitution of India</td>
<td>50</td>
<td>-</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>7.</td>
<td>Introduction to Treatment</td>
<td>80</td>
<td>20</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>8.</td>
<td>Allied Therapies</td>
<td>80</td>
<td>20</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>9.</td>
<td>Ethics, Administration and Supervision</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>10.</td>
<td>Evidence Based Physiotherapy Practice</td>
<td>80</td>
<td>20</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>11.</td>
<td>Project</td>
<td>-</td>
<td>50</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>