ST. ALBERT'S COLLEGE (AUTONOMOUS),

ERNAKULAM

Affiliated to Mahatma Gandhi University, Kottayam, Kerala

SYLLABUS FOR UNDERGRADUATE PROGRAMME

BACHELOR OF VOCATION IN
SPORTS NUTRITION AND
PHYSIOTHERAPY

UNDER CREDIT SEMESTER SYSTEM

(WITH EFFECT FROM 2023 ADMISSION)

Syllabus of B. Voc. SPORTS NUTRITION AND PHYSIOTHERAPY

Proposed by the Board of Studies on 1st March 2023

Dr. Sajeev Jose
Chairman, Board of Studies

Approved by the Academic Council on 14th March 2023

Dr. Bijoy V.M, Principal

Chairman, Academic Council.

Approved by the Governing Council on 22nd April 2023

Rev Dr. Antony Thoppil

Chairman, Governing Council

Board of Studies

No	Name	Designation
1	Dr. Sajeev Jos HOD, Department of Physical Education	Chairman
2	Dr. Binu George Varghese Director SPESS M G University, Kottayam	University Nominee
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5	Dr.Thomas K M, Asst. Professor St. Teresa's College, Ernakulam	External member
6	Mr. Gopalakrishnan P P, Manager and trainer, International Fitness System	Industrial Expert
7	Mr. Varghese Vazhoor -Yogacharia	Industrial Expert
8	Mr. Anty T J, Asst. Professor St. Albert's College (Autonomous), Ernakulam	Internal Member
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11	Ms. Anjana N.S, Asst.Professor St. Albert's College (Autonomous), Ernakulam	Internal Member
12.	Mrs. Amrutha Raveendran, Guest Faculty St. Albert's College (Autonomous), Ernakulam	Internal Member

Acknowledgement

The Board of Studies in Physical Education (Undergraduate), St. Albert's College takes this opportunity to express our deep appreciation to all academicians who participated in the various meeting that were arranged during the year, held at St. Albert's College, Ernakulam. We express our sincere gratitude to Dr. Binu George Varghese, Director SPESS MG University, Kottayam, for his guidance in the process of restructuring the Programme. We also express our sincere gratitude to Mr. Gopalakrishnan P P, Manager and Trainer, International Fitness System, for the guidance and contribution to the successful completion of the syllabus restructuring. Also we extent our sincere thanks to all the other faculty members for their whole hearted co-operation and immense support at each level of its preparation. Above all we thankfully acknowledge Almighty God for strengthening us to accomplish this work.

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Preface

As envisaged in the recent regulations of Autonomous colleges in India by University Grants Commission, autonomous colleges enjoy the academic freedom to enrich the curriculum by incorporating recent trends and needs. Curriculum and syllabus of each academic program has to be revised periodically to impart major objectives like global competency, skill component, values and regional relevance. Academicians and scholars in the respective area of knowledge have to express a missionary zeal for this great purpose.

The Syllabus revision committee of the department studied the present curriculum in detail and proposed some reasonable changes for further enrichment which may be implemented from 2023 admission onwards. The syllabus was proposed by teachers, academicians and other scholars from the field; aligned with existing M.G University regulation of 2018.

The present B Voc. Degree programme in Sports Nutrition and Physiotherapy is a Credit Semester System with six semesters. The present curriculum offers wide exposure to various conventional, advanced and applied fields in nutrition and physiotherapy which will facilitate them for a graduate final course or for pursuing higher studies in physiotherapy as well as sports nutrition. It is intended that students will acquire due knowledge and skill which will enable them to get employed in the biological research Institutes, and in related Industries/departments. Attempts were also made to integrate the essential components to generate interest for self-employment or start-ups among the pupils. All possible attempts have been made to update the syllabus by incorporating current and most recent developments in various branches of sciences.

GRADUATE ATTRIBUTES

On completion of an Undergraduate Programme from St. Albert's College (Autonomous), students would be able to demonstrate the graduate attributes listed below:

GA 1: Discipline knowledge

Demonstrate comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.

GA 2: Critical Thinking

Apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.

GA 3: Effective Communication

Capacity to connect with people, ideas, books, media, and technology to make sense of the world. This includes the ability to communicate, read, write, and listen clearly in person and through electronic media in English and in one Indian language.

GA 4: Social Responsibility

Exhibit qualities of an ideal citizen through civic and social responsibilities along with the knowledge of one's environment and the issues faced, and strive towards sustainable development.

GA 5: Digital Competency

Analyze and choose from available data and information sources to communicate, collaborate and network through a range of digital media.

Programme Outcomes

Upon completion of B.Voc Sports Nutrition and Physiotherapy programme, students would be able to demonstrate the programme outcomes listed below.

PO 1: Discipline Knowledge

Demonstrate comprehensive knowledge and understanding of disciplines that form a part of an undergraduate programme in Sports Nutrition and Physiotherapy.

PO 2: Critical Thinking

Analyse and critically evaluate principles, practices, techniques and theories of food, nutrition, health, fitness and physiotherapy by following scientific approach to knowledge development.

PO 3: Skill Development and Practical Application

Develop practical knowledge and skill in application to the field setting of Food, Nutrition, Health and Physiotherapy.

PO 4: Problem Solving

Analyze the conditions and issues related with Environment, Health, Nutrition and Physiotherapy and to provide possible solutions.

PO 5: Social Responsibility

Exhibit social responsibilities essential for the community related with health, disease and environmental factors and strive towards sustainable development.

PO 6: Effective Communication

Apply the knowledge of language and information technology to connect with people, ideas, books, media, and technology to provide information on food, health, nutrition and physiotherapy. This includes the ability to communicate, read, write, and listen carefully in person and through electronic media in English and in one Indian language.

Regulations

1. TITLE

These regulations shall be called "ST. ALBERT'S COLLEGE (AUTONOMOUS), ERNAKULAM - REGULATIONS FOR B. VOC. PROGRAMMES UNDER CREDIT SEMESTER SYSTEM 2023"(SACA B.VOC CSS 2023).

2. SCOPE

This applies to all regular B. Voc. Programmes conducted by the College with effect from 2023 admissions. The medium of instruction is English except in the case of language courses other than English unless otherwise stated therein.

3. DEFINITIONS

'Academic Week' is a unit of five working days in which the distribution of work is organized from day one to day five, with five contact hours of one-hour duration on each day / is a unit of six working days in which the distribution of work is organized from day one to day five with 4 hours and day six with 5 contact hours of one-hour duration on each day as decided by the Governing body of the College.

3.1 NSQF means National Skills Qualifications Framework

3.2 'General components' means a course that provides a general awareness about the discipline.

3.3 'Skill components' means a course in the subject of specialization within a vocational degree programme.

3.4 'Course' means a portion of a subject to be taught and evaluated in a semester (similar to a paper under the annual scheme).

3.5 'OJT' means On-the-job training for a period of 2 weeks.

3.6 Internship 'means a professional learning experience of 2-4 weeks that offers meaningful practical work related to students field of study.

3.7 'Credit' is the numerical value assigned to a paper according to the relative importance of the syllabus of the programme.

3.8 Department' means any teaching department in a college.

3.9 'Examination Coordinator' is a teacher nominated by a Department

Council to coordinate the continuous evaluation undertaken in that department.

3.10 'Department Council' means the body of all teachers of a department in a college.

3.11 'Class Tutor' means a teacher from the department nominated by the Department Council, who will advise the student on academic matters.

3.12 Grace Marks shall be awarded to candidates as per the Orders issued from the college from time to time at par with the affiliating University.

3.13 'Grade' means a letter symbol (A, B, C, etc.), which indicates the broad level of performance of a student in a Paper/Course/ Semester/Programme.

3.14 'Credit Point' (CP) is the numerical indicator of the percentage of marks awarded to a student in a course.

3.15 'Institutional Average (IA)' means average mark secured (Internal + external) for a course at the college level.

3.16 'Parent Department' means the department which offers the skill course/courses within an undergraduate programme.

3.17 'Programme' means a three-year programme of study and examinations spread over six semesters, the successful completion of which would lead to the award of a degree.

3.18 Semester' means a term consisting of 90 working days, inclusive of tutorials, examination days, and other academic activities within a period of five months.

3.19 'Vocational Course' (Skill Enhancement Course) means a course that enables the students to enhance their practical skills and ability to pursue a vocation in their subject of specialization.

3.20 Words and expressions used and not defined in this regulation shall have the same meaning assigned to them in the Acts and Regulations of UGC, Department of Higher Education, the affiliating University and regulations of the College.

4. ELIGIBILITY FOR ADMISSION AND RESERVATION OF SEATS

4.1 A pass in Plus Two or equivalent examination or an examination recognized as equivalent, with any science subject as one of the optional subject at plus two level.

4.2 Eligibility for admissions and reservation of seats for various Undergraduate Programmes shall be according to the rules framed by the Governing Body of the College in this regard, from time to time at par with the UGC norms and regulations of the Government of Kerala and will be published in the prospectus.

5. FACULTY UNDER WHICH DEGREE IS AWARDED

Faculty of Science.

6. CURRICULUM

The curriculum in each of the years of the programme would be a suitable mix of general education and skill development components.

7. DURATION

7.1 The duration of the U.G. programme shall be 6 semesters.

7.2 There shall be two semesters in an academic year, the "ODD" semester commences in June, and on completion, the "EVEN" Semester commences.

7.3 There shall be a two month vacation during April/May and internships may be conducted during this month as decided by the departments.

7.4 There shall be a two month vacation during April/May.

7.5 The certification levels will lead to Diploma/ Advanced Diploma/B.Voc Degree and will be offered under the aegis of the College in association with the respective Sector Skill Council of the programme in accordance with the NSQF as outlined in the Table given below.

Award	Duration

Diploma	2 Semesters
Advanced Diploma	4 Semesters
B.Voc. Degree	6 Semesters

8. ELIGIBILITY FOR HIGHER STUDIES

Those who pass B.Voc. Degree programmes are eligible for admission to higher studies.

9. CREDIT CALCULATION

The following formula is used for the conversion of time into credit hours.

One Credit would mean the equivalent of 15 periods of 60 minutes each, for theory, workshops/labs, and tutorials;

For internship/fieldwork/OJT, the credit weightage for equivalent hours shall be 50% of that for lectures/workshops.

10. REGISTRATION

The strength of students for each programme shall be as per the existing orders issued by the College following the UGC guidelines.

11. SCHEME AND SYLLABUS

11.1 The U.G. programmes shall include (a) General components, (b) Skill components.

11.2 Credit Transfer and Accumulation system can be adopted in the programme with the concurrence of the Governing Body of the College. Transfer of Credit consists of acknowledging, recognizing and accepting credits by an institution for programmes or courses completed at another institution. The Credit Transfer Scheme shall allow students pursuing a programme in one College/University to continue their education in another College/University without break.

11.3 The B.Voc programme should follow Credit and Semester System of St. Albert's College (Autonomous).

11.4 A separate minimum of 30% marks each for internal and external (for both theory and practical) and an aggregate minimum of 40% are

required for a pass for a course. For the programmes with practical examinations, the practical examinations will be conducted every semester or at the end of even semesters as applicable.

11.5 For a pass in a programme, a separate minimum of Grade P is required for all the individual courses. If a candidate secures an F Grade for any one of the courses offered in a Semester/Programme only F Grade will be awarded for that Semester/Programme until he/she improves this to P Grade or above within the permitted period. The candidate who secures P Grade and above will be eligible for higher studies.

12. PROGRAMME STRUCTURE

The B.Voc. programme shall include the following elements:

- General Education Components
- Skill Components
- Project
- Internships
- OJT
- Soft skills and Personality Development Programmes
- Field Visits/ Study Tours

	PARTICULARS	B.Voc Programmes
A	Programme Duration	6 Semesters
B	Total Credits required for successful completion of the Programme	180
C	Credits required from Skill Component	108
D	Credits required from General Component	72
G	Minimum attendance required	75%

13 COURSE STRUCTURE

NSQF Level	Credits		Normal Duration	Exit Points / Awards
	Skill Component	General Component		
Level 5 (Year 1)	36	24	Two Semesters	Diploma
Level 6 (Year 2)	72	48	Four Semesters	Advanced Diploma
Level 7 (Year 3)	108	72	Six Semesters	B. Voc. Degree

As per the UGC guidelines, there are multiple exit points for a candidate admitted to this course. If he/she is completing all six semesters successfully, he/she will get a B. Voc. Degree. If he/she is completing the first four semesters successfully, he/she will get an Advanced Diploma. If he/she is completing the first two semesters successfully, he/she will get a Diploma. A B.Voc. Degree holder is expected to acquire the skills needed for a Manager/Entrepreneur/Skilled employee.

14. ATTENDANCE

The minimum number of hours of lectures, tutorials, seminars or practicals which a student shall be required to attend for eligibility to appear at the end semester examination shall not be less than 75% of the total number of lectures, tutorials, seminars, or practical sessions and shall have 75% separate attendance during their Internship/OJT/HOT period also. Internships, HOT/OJT and soft skill and personality development programmes are part of the course and students must meet the attendance requirements for these activities to complete a semester.

15. Assessment and Certification by Sector Skill Council (SSC)

The department should make necessary arrangements for the simultaneous assessment and certification of Skill Development Component by aligned SSC having the approval of National Skill Development Corporation of India (NSDC).

16. EXAMINATION

The evaluation of each paper shall contain two parts:

Internal or In-Semester Assessment (ISA)

External or End-Semester Assessment (ESA)

The internal to external assessment ratio shall be 1:4.

Both internal and external marks are to be rounded to the next integer.

All papers (theory & practical), grades are given on a 7-point scale based on the total percentage of marks, *(ISA+ESA)* as given below :-

Percentage of Marks	Grade	Grade Point
95 and above	O (Outstanding)	10
90 to below 95	A+ – (Excellent)	9
80 to below 90	A - (Very Good)	8
70 to below 80	B+ – (Good)	7
60 to below 70	B - (Above Average)	6
50 to below 60	C– (Average)	5
40 to below 50	P– (Pass)	4
Below 40	F- (Failure)	0
	Ab - Absent	0

17. CREDIT POINT AND CREDIT POINT AVERAGE

The Credit Point (CP) of a paper is calculated using the formula:

CP = C × GP, where C is the Credit and GP is the Grade point.

Semester Credit Point Average (SCPA) of a Semester is calculated using the formula:

SCPA / CPA= TCP/TC, where TCP is the Total Credit Point of that semester.

Cumulative Credit Point Average (CCPA) is calculated using the formula:

CCPA = TCP/TC, where TCP is the Total Credit Point of that programme.

Credit Point Average (CPA) of different categories, of course, is calculated using the formula:

CPA = TCP/TC, where TCP is the Total Credit Point of a category of course.

TC is the total credit of that category of course.

Grades for the different courses, semesters and overall programme are given based on the corresponding CPA as shown below:

CPA	Grade	
9.5 and above	O	Outstanding
9 to below 9.5	A+	Excellent
8 to below 9	A	Very Good
7 to below 8	B+	Good
6 to below 7	B	Above Average
5 to below 6	C	Average
4 to below 5	P	Pass
Below 4	F	Failure

18. MARK DISTRIBUTION FOR EXTERNAL AND INTERNAL EVALUATIONS

The external theory examination of all semesters shall be conducted by the college at the end of each semester. Internal evaluation is to be done by continuous assessment. For all courses, the total marks for external examination is 80 and the total marks for internal evaluation is 20.

For the courses having both theory and practical components, the external examination marks would include 60 for theory and 20 for practical. The internal evaluation would remain the same as above.

Mark distribution for external and internal assessments and the components for internal evaluation with their marks are shown below:

18.1 For all theory courses

Marks of external Examination : 80

Marks of internal evaluation : 20

Components of Internal Evaluation of theory	Marks
Attendance	5
Assignment/ Seminar/Viva	5
Test Paper 1	5
Test paper 2	5
Total	20

18.2 For practical examinations,

The total marks for external evaluation : 80

The total mark for internal evaluation : 20

Components for internal evaluation of Practical	Marks
Attendance	5
Record	5
Skill Test/Lab Performance	5
Punctuality	5
Total	20

*Marks awarded for Record should be related to the number of experiments recorded and duly signed by the teacher concerned in charge.

All four components of internal assessments are mandatory unless for the courses otherwise mentioned in the BoS.

18.3 For Courses having both theory and practical components

A) Marks of Theory - External examination 20

B) Marks of practical - External examination 60

C) Marks of internal evaluation 20

18.4 For Internship with project

Marks of external evaluation : 80

Marks of internal evaluation : 20

Components of External Evaluation of Project	Marks
Dissertation (External)	50
Viva-Voce (External)	30
Total	80

*Marks for dissertation may include industrial visit report if proposed in the syllabus.

Components of Internal Evaluation of Project	Marks
Punctuality	5
Experimentation/ Data Collection	5
Skill Acquired	5
Report	5
Total	20

*All four components of internal assessments are mandatory unless for the courses otherwise mentioned in the BoS

18.5 For Internships

There will be only external evaluation for internships

Components of Enternal Evaluation of Internship	Marks
Dissertation(External)	50
Viva-Voce (External)	30
Marks awarded by the organization/ company/institution/agency (External)	20
Total	100

18.6 OJT

There will be only internal evaluation for OJT.

Components for Internal Evaluation for OJT

Components Internal Evaluation of OJT	Marks
Punctuality	10
Subject Knowledge/Viva	20
Report	50
Marks awarded by the organization/ company/institution/agency (External)	20
Total	100

The marks for the OJT conducted in the odd/even semester shall be uploaded in the concerned semester itself.

19. Attendance Evaluation for all papers

% of attendance	Marks
90 and above	5
85-89	4
80 -84	3
76 - 79	2
75	1

(Decimals are to be rounded to the next higher whole number)

20. ASSIGNMENTS

Assignments are to be done from Ist to VIth Semesters. At least two assignments should be done in each semester for all courses.

21. SEMINAR

A student shall present a seminar every semester for each course.

22. INTERNAL ASSESSMENT / TEST PAPERS

22.1 At least two internal test papers are to be attended in each semester for each course. The evaluations of all components are to be published and are to be acknowledged by the candidates. All documents of internal assessments are to be kept in the department for five years and shall be made available for verification by the

College. The responsibility of evaluating the internal assessment is vested on the teacher(s), who teaches the course.

22.2 In case of any grievances regarding internal assessment, students can follow the procedures mentioned below under Grievance Redressal Mechanism - clause number 23 in regulation.

22.3 The COE shall make arrangements for giving awareness of the internal evaluation components to students immediately after the commencement of the Ist semester.

22.4 The internal evaluation marks/grades in the prescribed format should reach the office of the Controller of Examinations, St. Albert's College before the commencement of study leave in each semester.

23. GRIEVANCE REDRESSAL MECHANISM WITH RESPECT TO INTERNAL EVALUATION

The internal assessment shall not be used as a tool for personal or other types of vengeance. A student has all rights to know how the teacher arrived at the marks. There is a provision for grievance redressal regarding internal evaluation which operates at four levels. Complaints regarding the internal evaluation shall be brought to the notice of the teacher concerned in the first instance. If the student is not satisfied with the decision of the teacher concerned, he/she may appeal to the Departmental Grievance Redressal Committee which shall have the Head of the department, the class Tutor, and the teacher against whom the complaint is made, as members. The student will also have the freedom to make further appeals to the College Level Grievance Redressal Committee which shall have the Principal, the COE, and the concerned Head of the department, as members. If the student is not satisfied, he may appeal to the Governing Body.

Level 1: Class level: The cell is chaired by the class tutor and the course teacher or a teacher nominated by the Head of the Department.

Level 2: Department level: The department cell chaired by the Head of the Department, Examination Coordinator and teacher-in-charge as members.

Level 3: College level: A committee with the Principal as Chairman, Examination Coordinator, HOD of concerned Department and a senior teacher nominated by the college council as members.

24. EXTERNAL EXAMINATION (END SEMESTER EXAMINATION)

a) The external examination of all semesters shall be conducted by the College at the end of each semester.

b) Students having a minimum of 75% average attendance for all the courses only can register for the examination. Condonation of shortage of attendance to a maximum of 10 days in a semester subject to a maximum of 2 times during the whole period of the programme may be granted by the college on valid grounds. This condonation shall not be counted for internal assessment. The benefit of attendance may be granted to students attending University/College union/Co-curricular activities by treating them as present for the days of absence, upon producing participation/attendance certificates, within one week, from competent authorities through the class tutor, HoD and Dean of Student Affairs and endorsed by the Principal. This is limited to a maximum of 10 days per semester and this benefit shall be considered for internal assessment also. Those students who are not eligible even with the condonation of shortage of attendance will not be readmitted.

c) The women students can avail maternity leave as per the M.G.U order No.490/AC A1/2023/MGU dated 16/01/2023.

d) There shall be special supplementary exams only for the fifth semester. For reappearance/ improvement for other semesters, the students can appear along with the next batch.

e) There shall be no provision for supplementary examination for the internal assessment.

f) A pass in the internal assessment is mandatory for registering for the End semester examination.

g) A student who registers his/her name for the external exam for a semester will be eligible for promotion to the next semester provided he/she meet the academic requirements.

h) All courses shall have a unique alphanumeric code.

25. PATTERN OF EVALUATION FOR EXTERNAL EXAMINATION – PRACTICAL / INTERNSHIP WITH PROJECT

The components of End Semester Examination of Practical/Internship with Project have to be set by the Chairman of the Boards of Studies concerned.

All students are required to complete On-job training (OJT), Internship and a project, as directed in the respective syllabus. The project can be done individually or as a group, as decided by the Department. The HOT and OJT has to be done during the period as prescribed in the particular semester of the programme. The project, if it is a requisite of the syllabi, has to be done in the final year of the programme. The reports of OJT (in duplicate) have to be submitted to the department during the particular semester prescribed in the programme and the report of the project (in duplicate) is to be submitted to the department in the sixth semester. The project report should be produced before the examiners appointed by the College.

For reappearance/ improvement, the students can appear along with the next batch. A student who registers his/her name for the external exam for a semester will be eligible for promotion to the next semester.

26. PATTERN OF QUESTIONS

Questions shall be set to assess knowledge acquired, standard and application of knowledge, application of knowledge in new situations, critical evaluation of knowledge, and the ability to synthesize knowledge. The question setter shall ensure that questions covering all skills are set. She/he shall also upload a detailed scheme of answer type, short essay type/problem-solving type, and long essay type questions to be generated from the question bank. A question paper shall be a judicious mix of short answer type, short essay type /problem-solving type, and long essay type questions and to be generated from the question bank.

a) Pattern of questions for external examination for theory paper without practical.

Pattern	Total no. of questions	Number of questions to be answered	Marks of each question	Total marks
Very Short Answer	12	10	2	20
Short Answer Not to exceed 60 words	9	6	5	30
Long essay	4	2	15	30
Total	25	18		80

b) Pattern of external examination for courses having both theory and practical components

Theory assessment - Short Answer Type				
Pattern	Total no. of questions	Number of questions to be answered	Marks of each question	Total marks
Short essay problem	8	5	4	20

Skill Assessment - Practical

Record	Theory/Procedure/ Design	Activity/ Design/ Performance	Result	Viva	Total
10	10	20	10	10	60
Total					80

FOR TRUTH AND SERVICE

b)Mark division of Lab Examination

Record	Theory/Procedure/ Design	Skill/ Neatness	Result	Viva	Total marks
10	20	25	15	10	80

27. MARK CUM GRADE CARD

The College under its seal shall issue to the students a MARK CUM GRADE CARD on completion of each programme, which shall contain the following information:

i) Name of the College

j) Title & Model of the B.Voc Programme

k) Name of the Semester

l) Name and Register Number of the student

m) Date of publication of result

n) Code, Title, Credits, and Maximum Marks (Internal, External & Total) of each course opted in the semester.

o) Internal, External and Total Marks awarded, Grade, Grade point, and Credit point in each course opted in the semester.

p) The total credits and total credit points in the semester.

q) Semester Credit Point Average (SCPA) and corresponding Grade.

r) Cumulative Credit Point Average (CCPA), CPA corresponding to General and skill Courses.

s) The final Mark cum Grade Card issued at the end of the final semester shall contain the details of all courses taken during the final semester examination and shall include the final Grade (SCPA) scored by the candidate from 1st to 5th semesters, and the overall Grade for the total programme.

28. RANK/POSITION CERTIFICATE

The college publishes a position list of the top 5 candidates for each programme after the publication of 6th-semester results. Position certificate shall be issued to candidates who secure positions from 1st to 3rd in the rank list. Candidates

shall be ranked in the order of merit based on the CCPA scored by them. Grace marks awarded to the students should not be counted in fixing the rank/position. Rank certificate and position certificate shall be signed by the Controller of Examinations.

29. There shall be 3 level monitoring committees for the successful conduct of the programme. They are -

29.1 Department Level Monitoring Committee (DLMC), comprising the HOD and two senior-most teachers as members.

29.2 College Level Monitoring Committee (CLMC), comprising the Principal, Controller of Examinations, and A.O/Superintendent as members.

29.3 Governing body.

30. TRANSITORY PROVISION

Not with standing anything contained in these regulations, the Governing body shall, for one year from the date of coming into force of these regulations, have the power to provide by an order that these regulations shall be applied to any programme with such modifications as may be necessary.

30.1 The Governing body is authorized to make necessary criteria for eligibility for higher education in the grading scheme, if necessary. The Governing body is also authorized to issue orders for the perfect realization of the Regulations.

Annexure I: Model Mark Cum Grade Card

St. Albert's College (Autonomous)

Ernakulam-682 018, Kerala, India.

Accredited by National Assessment and Accreditation Council (NAAC)

at A Grade ISO 9001: 2015 Certified

Affiliated to Mahatma Gandhi University, Kottayam, Kerala

GRADE CARD

NAME OF THE CANDIDATE											Student Photo		
PERMANENT REGISTER NUMBER (PRN):													
DEGREE													
PROGRAMME													
STREAM													
NAME OF THE EXAMINATION													
DATE OF ISSUE													
COURSE CODE	COURSE TITLE	MARKS							GP	GRADE	CGP	RESULT	
		CREDITS	INTERNAL		EXTERNAL		TOTAL						
			AWARDED	MAXIMUM	AWARDED	MAXIMUM	AWARDED	MAXIMUM					
General Component													
Skill Component													
	TOTAL												
	SEMESTER RESULT	SCPA:							SG:				

Controller of Examinations Principal

Annexure II: Consolidated Model Mark cum Grade Card

St. Albert's College (Autonomous)

Ernakulam-682 018, Kerala, India.

Accredited by National Assessment and Accreditation Council (NAAC) at A Grade ISO 9001: 2015 Certified

Affiliated to Mahatma Gandhi University, Kottayam, Kerala

CONSOLIDATED MARK CUM GRADE CARD

NAME OF THE CANDIDATE	
PERMANENT REGISTER NUMBER (PRN)	
DEGREE	
PROGRAMME	
STREAM	
DATE OF BIRTH	
DATE OF ELIGIBILITY	

Student Photo

		SEMESTER RESULTS					
SEMESTER	MARKS AWARDED	MAXIMUM MARKS	CREDITS	SCPA	GRADE	MONTH AND YEAR OF PASSING	RESULT
SEMESTER 1							
SEMESTER 2							
SEMESTER 3							
SEMESTER 4							
SEMESTER 5							
SEMESTER 6							
TOTAL							

	PROGRAMME PART RESULTS					
PROGRAMME PART	MARKS AWARDED	MAXIMUM MARKS	CREDIT POINTS	CREDITS	CCPA	GRADE
GENERAL COMPONENTS						
SKILL COMPONENTS						
TOTAL						

FINAL RESULT			
CREDITS	CCPA	GRADE	RESULT

COURSE		MARKS						RESULT

CODE	COURSE TITLE	CREDITS	AWARDED	RNAL MAXIMUM	AWARDED	EXTERNAL MAXIMUM	AWARDED	TAL MAXIMUM				
	SEMESTER 1											
	General Components											
	Skill Components											
SEMESTER RESULT		SCPA:								SG:		
	SEMESTER 2											
	General Components											
	Skill Components											
SEMESTER RESULT					SCPA:					SG:		
	SEMESTER 3											
	General Components											
	Skill Components											
SEMESTER RESULT		SCPA:								SG:		
	SEMESTER 4											
	General Components											
	Skill Components											
SEMESTER RESULT					SCPA:				SG:			
	SEMESTER 5											
	General Components											
	Skill Components											

SEMESTER RESULT	SCPA:									SG:		
SEMESTER 6												
General Components												
Skill Components												
SEMESTER RESULT	SCPA:								SG:			

Controller of Examinations

Principal

Annexure III: Reverse side of the mark cum Grade Card (Common to all Semesters)

DESCRIPTION OF EVALUATION PROCESS

Grade and Grade Point

The evaluation of each course comprises Internal and External components with the ratio 1:4 for all courses. Grade and grade points are given on a 7-point scale based on the percentage of marks (internal + external) as given in table I. Decimals are corrected to next higher whole number.

Table I

% of Marks	Grade	Grade Point
95 and above	O - Outstanding	10
90 to below 95	A+ – Excellent	9
80 to below 90	A - Very Good	8
70 to below 80	B+ - Good	7
60 to below 70	B– Above Average	6
50 to below 60	C– Average	5
40 to below 50	P – Pass	4
Below 40	F - Fail	0
	Ab Absent	0

Credit Point and Credit Point Average

Credit point (CP) of a course is calculated using the formula CP = C x GP Where C = Credit, GP = Grade Point

Credit Point average of a semester (SCPA) or Cumulative Credit Point Average (CCPA) for a programme is calculated using Total Credit point, TC = Total Credit

CCPA	Grade
9.5 and above	O - Outstanding
9 to below 9.5	A+ – Excellent
8 to below 9	A - Very Good
7 to below 8	B+– Good
6 to below 7	B – Above Average
5 to below 6	C – Average
4 to below 5	P – Pass
Below 4	F - Failure

Note: A separate minimum of 30 % marks each for internal and external (for both Theory

and practical) and an aggregate minimum of 40 % is required for a pass in a course. To

pass in a programme, a separate minimum of Grade P for all the individual courses and an

overall grade P or above is mandatory. If a candidate secures Grade F for any of the courses

offered in a semester or a programme only grade F will be awarded to that semester/Programme until the candidate improves this to Grade P or above within the

permitted period.

Read By	
Verified By	

QR Code

Programme Design

SEMESTER 1					
No.	Course Code	Course Title	GC/SC	Hours per week	Credits
1	ENG1CCT0323	Basic English Skills	GC	4	4
2	SNP1CMT0123	Basic Nutrition	GC	4	4
3	SNP1CMT0223	Food Science	GC	4	4
4	SNP1CRT0123	Human Physiology	SC	4	5
5	SNP1CRT0223	Human Anatomy	SC	5	5
6	VCS1CRP0123	Basic Computer Skills	SC	4	5
7	SNP1OJT0123	OJT-1	SC		3

SEMESTER 2					
No.	Course Code	Course Title	GC /SC	Hours per week	Credits
1	ENG2CCT0323	Advanced English Skills	GC	4	4
2	SNP2CMT0123	Food Microbiology	GC	4	4
3	SNP2CMT0223	Nutritional Biochemistry	GC	5	4
4	SNP2CRT0123	Yoga and Basic Life Support	SC	6	6
5	SNP2CRT0223	Orientation to Sports Physiotherapy	SC	6	6
6	SNP2CPR0123	Internship - 1	SC		6

SEMESTER 3					
No.	Course Code	Course Title	GC/ SC	Hours per week	Credits
1	SNP3CMT0123	Environment Science and Human Rights	GC	4	4
2	SNP3CMT0223	Clinical Orthopaedics & Sports Medicine	GC	4	4
3	SNP3CMT0323	Family Meal Management	GC	4	4
4	SNP3CRT0123	Sports and Exercise Therapy	SC	4	5
5	SNP3CRT0223	Electrotherapy	SC	4	5
6	SNP3CRT0323	Physiology of Sports and Exercise	SC	5	5
7	SNP3OJT0123	OJT- 2	SC		3

SEMESTER 4					
No.	Course Code	Course Title	GC /SC	Hours per week	Credits
1	SNP4CMT0123	Sports Psychology and Counselling	GC	4	4
2	SNP4CMT0223	Nutrition for Sports and Exercise	GC	5	4
3	SNP4CMT0323	Therapeutic Nutrition	GC	4	4
4	SNP4CRT0123	Physiotherapy in Orthopaedics and Sports Medicine	SC	6	6
5	SNP4CRP0123	Normal and Therapeutic Nutrition Practical	SC	6	6
6	SNP4CPR0123	Internship - 2	SC		6

SEMESTER 5					
No.	Course Code	Course Title	GC/SC	Hours per week	Credits
1	SNP5CMT0123	Research Methodology and Statistics	GC	4	4
2	SNP5CMT0223	Biomechanics	GC	4	4
3	SNP5CMT0323	Weight Management, Rehabilitation and Fitness	GC	4	4
4	SNP5CRT0123	Physiotherapy in Neurology and Neuro Surgery	SC	5	5
5	SNP5CRT0223	Sports Specific Nutrition	SC	4	5
6	SNP5CRP0123	Clinical Orthopaedics and Sports Medicine Practicals	SC	4	5
7	SNP5OJT0123	OJT - 3	SC		3

SEMESTER 6					
No.	Course Code	Course Title	GC/SC	Hours per week	Credits
1	SNP6CMT0123	Corporate Readiness Programme	GC	5	4
2	SNP6CMT0223	Physiotherapy in General Medicine and Surgery including Cardiothoracic Conditions	GC	5	4
3	SNP6CMT0323	Public Nutrition	GC	4	4
4	SNP6CRT0123	Clinical Sports Nutrition	SC	6	6
5	SNP6CRP0123	Sports Nutrition and Public Nutrition Practical's	SC	6	6
6	SNP6CPR0123	Internship with Project	SC		6

Detailed Syllabus: Semester I

General Component: Basic English Skills (ENG1CCT0323)

60 Hours 4 Credits

Course Outcome

- Recognize the speech sounds and suprasegmental features.
- Familiarize different dialects and the accents.
- Demonstrate the features of listening, reading and speaking skills.
- Develops skills in face to face and telephonic communication as well as in group discussions.
- Develop the ability to use English for performing some of the most common communicative functions in academic, social and professional situations.

Module I (12 Hours)

Speech Sounds: Phonemic symbols – Vowels – Consonants – Syllables – Word stress – Stress in polysyllabic words – Stress in words used as different parts of speech – Sentence stress – Weak forms and strong forms – Intonation

Module II (12 Hours)

Accents: Awareness of different accents: American, British and Indian – Influence of the mother tongue.

Module III (12 Hours)

Listening: Active listening – Barriers to listening – Listening and note taking – Listening to announcements – Listening to news on the radio and television.

Module IV (12 Hours)

Speaking: Word stress and rhythm – Pauses and sense groups – Falling and rising tones – Fluency and pace of delivery – Art of small talk – Participating in conversations – Making a short formal speech – Describing people, place, events and things – Group discussion skills and telephone skills.

Module V (12 Hours)

Reading: Theory and Practice – Scanning – Surveying a textbook using an index – reading with a purpose – Making predictions – Understanding text structure – Locating main points – Making inferences – Reading graphics – Reading critically – Reading for research.

References

- V.Sasikumar, P KiranmaiDutt& GeethaRajeevan. Communication Skills in English. Cambridge University Press and Mahatma Gandhi University.
- A Course in Listening and Speaking I & II, Sasikumar, V.,KiranmaiDutt and GeethaRajeevan, New Delhi: CUP, 2007
- Study Listening: A Course in Listening to Lectures and Note-taking Tony Lynch New Delhi: CUP,
- Study Speaking: A Course in Spoken English for Academic Purposes. Anderson, Kenneth, Joan New Delhi: OUP, 2008

Pedagogical Tools

- Lecture
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Employability enhancement
- Language Skills

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

General Component: Basic Nutrition (SNP1CMT0123)

60 Hours 4 Credits

Course Outcomes

- Illustrate the basic knowledge about food and nutrition.
- Enumerate on digestion, absorption, metabolism and assimilation of all the basic five nutrients.
- Achieve in depth knowledge on food and its nutritional composition.
- Develop mental skills in basic food preparation techniques.
- Develop proficiency in estimating the nutrient content of various dishes.

Course Outline

Module I (12 Hours)

Introduction to Nutrition, Definitions: Food, Nutrition, Health, Nutrients, optimum nutrition, nutritional status, malnutrition, under nutrition, signs of good nutritional status, signs of poor nutritional status, definition and functions of nutrients. Functions of food as a source of nutrients. Five food groups, dietary guidelines, food pyramid, my plate, food as a medicine.

Food and Our Body: Food and its functions, digestion, absorption and metabolism of food Buccal digestion, gastric digestion and intestinal digestion, factors that affect digestion, absorption and metabolism,

Module II (12 Hours)

Carbohydrates: Introduction, classification of carbohydrates, digestion, absorption, functions, deficiency, recommended dietary intake and sources. Role of dietary fibre in prevention and treatment of diseases.

Proteins: Introduction, classifications of proteins, nutritional classification of amino acids protein quality - biological value, net protein utilization, protein efficiency ratio. Function, deficiency, sources and requirements.

Module III (12 Hours)

Lipids: Introduction, classification of lipids, functions of fat, digestion and absorption of fat, deficiency, food sources and RDA .

Energy Metabolism: Introduction, unit of measurement, energy value of food-

Calorimetry or bi proximate composition; energy needs of the body- reference man and reference woman; basal metabolic rate, factors affecting the BMR.

Module IV (12 Hours)

Vitamins: Classification- fat soluble and water-soluble vitamins; Fat soluble vitamins, A, D, E and K -Introduction, function, deficiency, sources, RDA

Water soluble vitamins- B complex and C- Introduction, functions, deficiency, sources, RDA

Module V (12 Hours)

Minerals: General functions of minerals: calcium, sodium, potassium, iron, iodine, zinc, selenium, fluorine. Factors affecting absorption. Deficiency disorders, sources and RDA.

Water: Introduction, functions, water, daily intake of water, daily loss of water, body water, water balance, deficiency of water, retention of water, daily requirements.

References

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- Barasi, Mary E : Human Nutrition : A health perspective. London : Arnold, 1997.
- Present Knowledge in Nutrition. International Life Sciences Institute.
- Eastwood, Martin & Edwards, Christine & Parry, Doreen : Human nutrition : a
- continuing debate. London : Chapman & Hall, 1992.
- The Role of Fats in Human Nutrition/edited by F B Padley and Podmore. Chichester:
- Ellis Horwood, c1985.(Ellis Horwood Series in Food Science and Technology, edited by I D Morton)
- Guthrie Helen (1986) Introductory Nutrition. Times Mirror/ Mosby College Publishing.
- Mudambi, S.R., Rajgopal, M.V.(1990) Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.

Pedagogical Tools

- Lecture
- Practical Lab
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

General Component: Food Science (SNP1CMT0223)

60 Hours 4 Credits

Course Outcomes

- Enable students to gain knowledge on nutritive value and properties and functions of different food groups.
- Identify the changes in property during food handling and storage.
- Identify the changes in property during cooking.
- Enable the students to learn and analyse food texture & flavours .

Module I (12 Hours)

INTRODUCTION TO FOOD SCIENCE

Introduction to food science, scope and applications of food science,

food & sources, classification of foods (based on perishability, Ph).

Culinary cutting terms- Parts of knife, types of cutting -Chiffonade, Julienne, Batonnet, Slicing, cubing, Dicing, Mincing.

Five food groups, Safe food handling measures.

Module II (12 Hours)

CEREALS , MILLETS, PULSES

Cereals - Structure, properties, nutritive value. Gelatinization, Gelation, Syneresis, Retrogradation, Dextrinisation. Factors affecting gelatinization and gelation. Modified starch, resistant starch. Flour mixtures- batter and dough, Gluten formation, Gum- functions , sources, applications. Breakfast cereals

Pulses and legumes - Nutritive Composition and processing- Germination, factors affecting cooking, anti nutritional factors in pulses.

Module III (12 Hours)

VEGETABLES AND FRUITS

Nutritive value, pigments, ripening and senescense. Enzymatic and non enzymatic changes, browning reaction.

Module IV (12 Hours)

MILK, MEAT AND POULTRY

Composition of milk, properties of milk, effect of heat on milk, milk and milk products, milk substitutes

MEAT, FISH AND POULTRY

Meat- Types, Nutrient Composition, rigor mortis, tenderization of meat, cooking methods, effect of cooking,

FISH AND SEA FOODS - Nutrient composition, selection, changes during processing

EGGS - Composition, functional properties of eggs, use in cooking, egg processing and egg products

MODULE V (12 Hours)

FATS, OILS AND SUGARS

Properties of fat, role of fats and oils in cooking, fat substitutes, fat deterioration, chemical degradadtion, oxidative and hydrolytic rancidity. Efffect of heat and chemical modification of fats- hydrogenation, transfat

SUGARS - Properties, chemical reactions- Caramelization, maillard reaction, food applications : crystalline candies, syrup, sauces, jams and jellies, stages of sugar cookery, crystallisation

Practical

- Planning and conducting a food demonstration.
- Cutting and slicing of vegetables.
- Gluten formation in dough
- Stages of sugar cookery
- Gelatinization of starch
- Determination of smoking point
- Effect of heat and ph in vegetable pigments
- Application of simple cooking methods.

References

- ICMR (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, Indian

Council of Medical Research, Hyderabad.

- Vickie Vaclavik, Elizabeth. W. Christian (2013), 4th edition, " Essentials of food science" , Springer Science & Buisness Media.
- George Stewart , 2012, " Introduction to Food Science and Technology", Elsevier.
- Sumati Rajagopal Mudambi, Shalini M Rao, M V Rajagopal, (2006), "Food Science", New Age International.

Pedagogical Tools

- Lecture
- Practical sessions
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

Skill Component: Human Physiology (SNP1CRT0123)

75 Hours 5 Credits

Course Outcomes

- Describe the cell morphology and functions.
- Explain the composition and functions of plasma proteins, RBC, WBC, Platelets, lymph and plasma.
- Describe the cardiac muscles and conducting system of heart, regulation of blood pressure, heart rate and cardiac output.
- Write down the mechanics of breathing, spirometry, pulmonary circulation, regulation of respiration.
- Explain the composition, functions and regulation of salivary secretion, gastric juice, pancreatic secretion, succus entericus.
- Describe the functions and regulation of major glands and its hormones
- Identify the male and female reproductive system
- Explain about special senses like vision, audition, smell, taste etc
- Differentiate the sensory and motor mechanism, reflex action, spinal cord lesions

Module I (15 Hours)

Cell - Basic structure and Functions Organelles, transport mechanisms across the cell membrane. Body fluids- compartment and composition. Blood- introduction, properties, composition, functions of blood. RBC, WBC- introduction, count, morphology, classification, functions, Erythropoiesis- stages, Hemoglobin- anaemia, classification. Platelets- structure and functions. Immunity- types, Hemostasis- stages. Coagulation of blood- stages, mechanism. Blood groups and blood transfusion-types, matching and cross matching. Lymphatic system- lymph nodes, tissue fluid, edema.

Muscles- classification, types, structure, properties .

Module II (15 Hours)

Cardiovascular system - Functional Anatomy of Heart. Properties, Heart rate, heart sound, Cardiac cycle, cardiac output, blood pressure, hypertension,

radial pulse.

Respiratory System – introduction, Type, Functions, pulmonary circulation, mechanics, pulmonary function test(Lungs volumes and capacities).

Module III (15 Hours)

Digestive System – Introduction, functional anatomy of the digestive system. Mouth and salivary secretion- glands, classification, functions. Stomach- functions, functions of gastric juice, Pancreas- introduction, functions, functions of pancreatic juice. Liver, biliary system and gallbladder - introduction, functions. Small intestine and Large intestine and their secretions.

Renal system- Introduction, functions of kidney.Nephron. Juxtaglomerular apparatus- functions. Renal circulation, urine formation, Micturition.

Endocrine system- endocrine glands, introduction, functions.

Module IV (15 Hours)

Nervous System – introduction, Spinal Cord- reflex activity, tracts in spinal cord, cerebrospinal fluid, thalamus, hypothalamus, cerebellum, basal ganglia, cerebral cortex, Parts and its function, Central nervous System, Peripheral Nervous System, autonomic nervous system- sympathetic and parasympathetic division, somatic nervous system, Peripheral Nerves and Cranial Nerves,

Module V (15 Hours)

Skin – introduction, functions. Special senses – Eye, introduction, visual process and filed of vision, visual pathway, Ear, introduction, auditory pathway, mechanism of hearing, Sensation of taste and smell and its pathway.

Reproductive system- male reproductive system-introduction, functions of testis,, stages. Female reproductive system- introduction, menstrual cycle, functions of ovum, stages, in, Fertilization, pregnancy, mammary glands, lactation.

Human Physiology (Practical)

To be done by the students

I. Clinical Examination

1. Examination of Radial Pulse

2. Recording of blood Pressure
3. Examination of Respiratory system
4. Examination of sensory system
5. Examination of reflexes
6. Examination of cranial nerves

References

- Guyton A. C., Hall J. E., Text book of Medical Physiology (1996), 9th Edition, Prism Books Pvt. Ltd, Bangalore.
- Winwood; Sear's Anatomy and Physiology for Nurses (1988), Edward Arnold, London.
- Chatterjee C. C., Text book of Medical Physiology (1988) W. B. Saunder's Co., London.
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- well Science.
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- systems software.
- Understanding Medical Physiology , R.L. Bijlani, (1995) J P Brothers Medical

- Publishers.
- Text Book of Medical Physiology, Guyton Hall , (2003)Saunders publishers.
- Principles of Anatomy and Physiology. Tortora (2003). John Wiley and sons.
- Human Physiology, by C.C.Chatterjee, (2002)Medical Allied Agency

Pedagogical Tools

- Lecture
- Practical Lab
- Group Discussion
- Use of models

Expected Skills, Proficiencies and Values

- Employability enhancement
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

Skill Component: Human Anatomy (SNP1CRT0223)

75 Hours 5 Credits

Course Outcomes

- Study the basic tissues of the body.
- Understand Embryology: Ovum, Spermatozoa, fertilization and formation of the Germ layers and their derivations. Development of skin, fascia, blood vessesls, lymphatic. Development of Bones axial and appendicular skeleton and muscles. Neural tube, brain vessels and spinal cord and development of brain and brain stem structures.
- Understand the regional anatomy of cardiovascular system, respiratory system, abdomen, pelvis and endocrine system.
- To study musculoskeletal anatomy including osteology, soft parts, joints of upper extremity, trunk, pelvis, head and neck.
- Understand the Neuro Anatomy including Organization of Central Nervous System, Spinal nerves and Autonomic Nervous System, Cranial Nerves, Peripheral Nervous System and Central Nervous System.

Course Outline

Module I (15 Hours)

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.

Module II (15 Hours)

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

Module III (15 Hours)

Regional Anatomy Thorax:

a) Cardio-Vascular System - Mediastinum: Divisions and contents; Pericardium:

Thoracic wall- position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart, names of the blood vessels and their distribution in the body-region wise (b) Respiratory system: Outline of respiratory Passages, Pleura and lungs – position, parts, relations, blood supply and nerve supply; Lungs-emphasize on broncho-pulmonary segments; Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm

Inter costal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action Abdomen:

a) Peritoneum: Parietal peritoneum, Visceral peritoneum, folds of peritoneum, functions of peritoneum

b) Large blood vessels of the gut

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

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

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

Module IV (15 Hours)

Musculo Skeletal Anatomy

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:

Osteology: Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.

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. Joints: Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand. Arches of hand, skin of the palm and dorsum of hand.

g) Lower Extremity

Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.

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
Joints: Hip Joint, Knee joint, Ankle joint- joints of the foot.

h) Trunk & Pelvis:

Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs

Soft tissue: Pre and Para vertebral muscles, intercostals muscles, anterior abdominal

wall muscles, Inter-vertebral disc.

Pelvic girdle and muscles of the pelvic floor.

i) Head and Neck:

Osteology: Mandible and bones of the skull.

Soft parts: Muscles of the face and neck and their nerve and blood supply-extra ocular

muscles, triangles of the neck.

Gross anatomy of eyeball, nose, ears and tongue

Module V (15 Hours)

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

Peripheral nerve, neuromuscular junction, Sensory end organs d) Central Nervous System

Spinal cord, Spinal segments and areas, Brain Stem, Cerebellum, Inferior colliculi, Superior Colliculi, Thalamus, Hypothalamus, Corpus striatum, Cerebral hemisphere, Lateral ventricles, Blood supply to brain, Basal Ganglia, The Pyramidal system, Pons, medulla, extra pyramidal systems, Anatomical integration

References

- Snell, Richard S, clinical anatomy for medical students, ed.5. Little brown and company Boston, 1995
- Moorie, Kieth . Clinically oriented anatomy. Ed. 3. Williams and wilkins. Baltimore, 1992
- Datta A. K. Essentials of human anatomy: thorax and abdomen, ed. 2.vol. I. Current book international, Calcutta, 1994
- Datta A K. Essentials of human anatomy: head and neck & ed. 2. Vol. Ii. Current book international, Calcutta, 1994
- Singh, Inderbir. Text book of anatomy with colour atlas: introduction, osteology, upper extremity, Vol. I, JP brothers, New Delhi 1996.
- Singh, Inderbir. Text book of anatomy with colour atlas: thorax and abdomen. Vol. II, j. P. Brothers, New Delhi 1996.
- Singh, Inderbir Text book of anatomy with colour atlas: head and neck, central nervous system. Vol. Liijp brothers, New Delhi 1996.
- Singh, Inderbir Human osteology, JP brothers, New Delhi 1990.

Pedagogical Tools

- Lecture
- Practical Lab
- Role Play
- Group Discussion
- Use of models
- Use of Specimens

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards
- Human Values/ Indian Values/ Indian Culture/ Indian Heritage
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

Skill Component: Basic Computer Skills (VCS1CRP0123)

75 Hours 5 Credits

Course Outcomes

- Recall the basic fundamentals of Information Technology.
- Create documents using features available in Microsoft Word.
- Format data and cells, construct formulas, including the use of built-in functions, and relative and absolute references.
- Create and modify charts.
- Create slide presentations that include text, graphics, animation, and transitions.

Module I (15 Hours)

Introduction to Information Technology

Information and Communication Technology (ICT), Information systems E-World - Computer Architecture: Input Hardware - Processing & Memory Hardware, Storage Hardware, Output Hardware, Communication Hardware - Concept of operating system - Understanding your computer customization configuring screen, mouse, printer.

Module II: Word Processing Package (15 Hours)

Introduction - Features - Word User Interface Elements; Creating new Documents; Basic Editing, Saving a Document; Printing a Document; Print Preview, Page Orientation - Viewing Documents; Setting tabs - Page Margins; Indents; Ruler, Formatting Techniques; Font Formatting, Paragraph Formatting; Page Setup; Headers & Footers; Bullets and Numbered List; Borders and Shading; Find and Replace; Page Break & Page Numbers; Mail Merging-Spelling and Grammar Checking; Tables; Formatting Tables

Module III:

Spreadsheet Package (15 Hours)

Introduction, Excel User Interface, Working with cell and cell addresses, Selecting a Range, Moving, Cutting, Copying with Paste, Inserting and Deleting cells, Freezing cells, Adding, Deleting and Copying Worksheet within a workbook, Renaming a Worksheet. Cell Formatting Options, Formatting

fonts, Aligning, Wrapping and Rotating text, Using Borders, Boxes and Colors, Centering a heading, Changing row/column height/width, Formatting a Worksheet Automatically, Insert Comments, Clear contents in a cell. Using print Preview, Margin and Orientation, Centering a Worksheet, Using header and footer.

Module IV: Advanced Features of Spreadsheet Package (15 Hours)

All Functions in Excel, Using Logical Functions, Statistical functions, Mathematical etc. Elements of Excel Charts, Categories, Create a Chart, Choosing chart type, Edit chart axis - Titles, Labels, Data series and legend, Adding a text box, Rotate text in a chart, Saving a chart.

Module V: Presentation Package (15 Hours)

MS-PowerPoint: Advantages of Presentation Screen layout creating presentation inserting slides adding sounds & videos-formatting slides -slide layout views in presentation -slide transition Custom animation Managing slide shows - using pen Setting slide intervals

Reference

- Antony Thomas. Information Technology for Office. Pratibha Publications
- Gini Courter & Annette Marquis. Ms-Office 2007: BPB Publications

Pedagogical Tools

- Lecture
- Practical Lab
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam

- Assignments
- Seminar
- Credit for Merit

Skill Component: OJT - 1 (SNP1OJT0123)

3 Credits

The student will attach himself with a Hospital or Health care institution/fitness center/organization approved by the Department for a period of 2 weeks for Industry Training. The student should actively participate in the operations of the institution. Student should also produce a certificate of internship from the organization. All the above details should be submitted to the Department for evaluation.

Detailed Syllabus: Semester II

General Component: Advanced English Skills (ENG2CCT0323)

60 Hours 4 Credits

Course Outcomes

- Develop judgment skills.
- Develops evaluation and problem-solving skills.
- Learn basic grammar to use the English language accurately.
- Create awareness about different types of official writings to enhance official communication skills.
- Build the ability to do presentations in a better way.

Module I (12 Hours)

Critical Thinking: Introduction to critical thinking – Benefits - Barriers – Reasoning - Arguments - Deductive and inductive arguments – Fallacies - Inferential comprehension Critical thinking in academic writing - Clarity - Accuracy – Precision – Relevance.

Module II (12 Hours)

Research for Academic Writing and the Writing Process: Data collection - Use of print, electronic sources and digital sources - Selecting key points - Note making, paraphrasing, summary – Documentation - Plagiarism – Title – Body paragraphs - Introduction and conclusion – Revising - Proof-reading.

Module III (12 Hours)

Accuracy in Academic Writing: Articles - Nouns and prepositions - Subject-verb agreement - Phrasal verbs - Modals - Tenses - Conditionals – Prefixes and suffixes – Prepositions - Adverbs – Relative pronouns - Passives - Conjunctions - Embedded questions - Punctuation – Abbreviations.

Module IV (12 Hours)

Writing Models: Letters - Letters to the editor - Resume and covering letters - e-mail - Seminar papers - Project reports - Notices - Filling application forms - Minutes, agenda – Essays.

Module V (12 Hours)

Presentation Skills: Soft skills for academic presentations - Effective

communication skills – Structuring the presentation - Choosing appropriate medium – Flip charts – OHP – Power Point presentation – Clarity and brevity - Inter-action and persuasion - Interview skills – Group Discussions.

References:

- Marilyn Anderson, Pramod K Nayar and Madhucchandra Sen. Critical Thinking, Academic Writing and Presentation Skills. Pearson Education and Mahatma Gandhi University

Pedagogical Tools

- Lecture
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

General Component: Food Microbiology (SNP2CMT0123)

60 Hours 4 Credits

Course Outcomes

- Describe the nature of microorganisms involved in food spoilage, food infections and intoxications and also those used in food biotechnology.
- Discuss about the principles of various techniques used in the prevention and control of the microorganisms in foods.
- Explain the criteria for microbiological safety in various foods operations to avoid public health hazards due to food contamination.
- Explain the enrichment and food preservation technique.
- Explain the uses of microorganisms in food development.

Module I (15 Hours)

Overview of Basic Microbiology

Definition, Scope of Food Microbiology

An introduction to microbial world: Bacteria, Fungi, Yeast, Viruses

1. Bacterial groups based on their morphology: Gram +ve/Gram –ve bacteria, Motile/Non-motile bacteria, Sporulating/ Non-sporulating bacteria
2. Bacterial groups based on their physiological growth factors: Temperature, pH, water activity, availability of oxygen.2

Fungi and Yeast: General features & their importance in food Microbiology

Viruses and Bacteriophages: Definition, their general characteristics & multiplication.

Module II (15 Hours)

Food Spoilage and Preservation

Food spoilage: Definition, sources of contamination and

Microorganisms involved in spoilages of various foods: Milk, Bread, Canned food, Vegetables and fruits, Fruit juices, Meat, Eggs and Fish

Physical and chemical means used in destruction of microbes: Definition of sterilization and disinfection, role of heat, filtration and radiation in sterilization,

use of chemical agents-alcohol, halogens and detergents

Module III (15 Hours)

Microorganisms in Human Welfare

Importance of microbes in food biotechnology: genetically engineered organisms, probiotics and single cell proteins.

Dairy products (cheese and yoghurt) and traditional Indian fermented foods and their health benefits.

Module IV (15 Hours)

Food safety and Quality Control

Public health hazards due to microbial contamination of foods: Important food borne infections and intoxications due to bacteria, moulds, viruses (Salmonella typhi, Helicobacter pylori, Campylobacter jejuni, Yersinia enterocolitica, Bacillus cereus, Staphylococcus aureus, Clostridium botulinum, Escherichia coli, Mycotoxins, Hepatitis A virus & Rota virus)- Symptoms, mode of transmission and methods of prevention. 12

Assessing the microbiological quality of food: indicator organisms, microbiological standards, principles of HACCP in food processing. Safety management at household and industrial level.

References

- Banwart GJ.(1987) Basic Food Microbiology . CBS Publishers and Distributors.
- Frazier WC, Westoff DC.(1998)Food Microbiology. 4th ed. Tata McGraw- Hill Publishing Co. Ltd.
- Garbutt John (1997) Essentials of Food Microbiology. Arnold London.
- Jay JM, Loessner DA, Martin J.(2005) Modern Food Microbiology. 7th ed.
- Springer
- Pelczar MJ, Chan ECS, Krieg N. (1993) Microbiology. 5th ed. Tata
- McGraw-Hill Publishing Co. Ltd.
- Prescott LM, Harley JP, Klein DA.(2008) Microbiology. 6th ed. WMC Brown
- Publishers.

Pedagogical Tools

- Lecture
- Internships
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

General Component: Nutritional Biochemistry (SNP2CMT0223)

60 Hours 4 Credits

Course Outcomes

- Explain the basic concepts of energy metabolism, Nutrients and dietetics.
- Explain the chemical/biochemical properties and metabolic pathways of carbohydrates, lipids, and proteins.
- Distinguish the types and classification of enzymes, coenzymes and isoenzymes.
- Classify the types and role of Vitamins in the human body.
- Describe the measurements of various biomarkers.

Module I (12 Hours)

Basics of energy metabolism - Unit of measuring energy, calorific value of food, BMR & factors affecting it, SDA of food, calculation of energy requirement, balanced diet, nutrition in health & diseases (protein energy malnutrition).

Carbohydrates- Chemistry of carbohydrates & their related metabolism - Introduction, definition, classification, biomedical importance. Brief outline of metabolism: Glycogenesis & glycogenolysis (in brief), Glycolysis, citric acid cycle & its significance, HMP shunt & Gluconeogenesis (in brief), regulation of blood glucose level.

Module II (12 Hours)

Amino acids - Definition, classification, essential &non-essential amino acids. Chemistry of Proteins & their related metabolism - Introduction, definition, classification, biomedical importance Metabolism: Transformation, Decarboxylation, Ammonia formation & transport, Urea cycle.

Chemistry of Lipids & their related metabolism- Introduction, definition, classification, biomedical importance, essential fatty acids, identification of fats & oils (saponification no, acid no, iodine no, acetyl no, reichertmiesel no. etc.) Brief out line of metabolism: Beta oxidation of fatty acids, Ketosis, Cholesterol & its clinical significance,

Lipoproteins in the blood composition & their functions in brief, Atherosclerosis.

Module III (12 Hours)

Enzymes - Introduction, definition, classification, coenzymes, isoenzymes, properties, factors affecting enzyme action, enzyme inhibition, diagnostic value of serum enzymes - Creatinine kinase, Alkaline phosphatase, Acid phosphatase, LDH, SGOT, SGPT, Amylase, Lipase, Carbonic anhydrase etc.

Acid base balance concepts & disorders - pH, Buffers, Acidosis, Alkalosis .

Hormones - Classification, general mode of action, hormones of Pituitary, Thyroid, Parathyroid, Adrenals, Reproductive Glands, Pancreas, hormonal disorders, counter regulatory hormones.

Module IV (12 Hours)

Vitamins - Water- & fat-soluble vitamins, sources, requirement, deficiency disorders & biochemical functions. Water metabolism Distribution of fluids in the body, ECF, ICF, Water metabolism, dehydration.

Module V (12 Hours)

Liver functions and their assessment - Based on a) Carbohydrate metabolism b) Protein metabolism c) Lipid Metabolism d) Measurements of serum enzyme levels e) Bile pigment metabolism: Jaundice - its types and their biochemical findings. Renal functions tests - Various tests, GFR & clearance.

References

- Color Atlas of Biochemistry (2nd or 3rd Edition) by Koolman and Roehm
- Harper's Illustrated Biochemistry (29th Edition) by Murray, Bender, Botham, Kennelly, Rodwell, and Well (McGraw Hill Publishers,
- Advanced Nutrition and Human Metabolism (5th Edition) by Gropper, Smith and Groff

Practical

1. Identification of carbohydrates (Qualitative Tests)
2. Identification of proteins (Qualitative Tests)
3. Estimation of glucose in urine by Benedict's methods

Pedagogical Tools

- Lecture
- Role Play

- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

Skill Component: Yoga & Basic Life Support (SNP2CRT0120)

90 Hours 6 Credits

Course Outcomes

- Explain the importance of first aid in physiotherapy.
- Examine vital signs such as blood pressure, temperature, pulse and respiratory rate.
- Demonstrate first aid in cardiac arrest, respiratory failure, burns, electric shock, drowning, spinal cord injuries, poisoning, road traffic accident etc.
- Explain the interpersonal relationship and nursing principles and demonstrate various lifting and transporting techniques.
- Describe various methods of giving nourishment like feeding, tube feeding, IV fluids, blood transfusion.
- Explain the role of yoga.
- Demonstrate various Asanas.

Module I (18 Hours)

First Aid, objectives, first aider.

Importance of First Aid in Physiotherapy

Instrumentation used in First Aid (First Aid kit)

Examination of Vital Signs

Resuscitation techniques, recovery position

Module II (18 Hours)

First Aid in haemorrhage, wounds

First Aid in fracture

First Aid in snake bite

First Aid in sports injuries

First Aid in RTA

First Aid in Burns- sun burn,

Module III (18 Hours)

First Aid in cardiovascular failure- cardiac arrest, heart attack, angina pectoris,

First Aid in Respiratory failure- choking, asphyxia, drowning, suffocation, hanging, smoke inhalation.

First Aid in Electric shock, Hypovolemic Shock

First Aid in Spinal cord injuries

First Aid in Stroke, Epilepsy

First Aid in Poisoning

Module IV (18 Hours)

Yoga: Introduction, Meaning of Yoga, Aim of Yoga, Types of Yoga, Yoga in the Bhagavadgita- Karma Yoga, Raja Yoga, Jnana Yoga and Bhakti Yoga, Concept of Yoga. The Astanga Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi.

Asanas: Introduction , rules for yoga Asanas, Importance of Yoga Asanas, Meditative poses, Cultural poses, Asanas/yogic exercises and the cure of diseases. Pranayama: Meaning of Pranayama, Objectives of Pranayama, Types of pranayama, Physiological values of pranayama. Sudhikriya: Introduction, Objective of Sudhikriya, Types of Sudhikriya,

Module V (18 Hours)

Nursing Principles. Inter- Personnel relationships: Bandaging: Basic turns; Bandaging extremities; Triangular Bandages and their application.

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

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

Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion.
Care of Rubber Goods: Observation, Reporting and Recording, Temperature, Respiration and Pulse, simple aseptic Technique, Sterlisation and Disinfection.

References

- First aid in Emergency, St. John ambulance Association
- Physiotherapy in Burns & Reconstruction by Glassey
- Surgical & Medical Procedures for Nurses & Paramedical staff by Nathan

- First aid & Management of general injuries & common ailments by Gupta & Gupta
- Therapies for Medical Professional by Vigneswara
- Basics in Occupational Therapy and Therapeutic Activities by Punithan
- Alternative Therapies by Bhagat

Pedagogical Tools

- Lecture
- Organizational Visit
- Practical Lab
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships
- Industrial Visit

Skill Component: Orientation to Sports Physiotherapy (SNP2CRT0223)

90 Hours 6 Credits

Course Outcomes

- Ability to communicate clearly and effectively, orally and in writing, to the users of the healthcare system, as well as to other healthcare professionals.
- Ability to work in professional teams and in collaboration with staff from professional healthcare organizations that are structured as basic or multidisciplinary units.
- Ability to apply ethical and legal principles to the practice of the profession.
- Command of spoken and written language.
- Respect for the fundamental rights of equality between men and women, the promotion of human rights and values of a culture of peace and democratic values.

Module I (18 Hours)

Patterns of Health care Delivery: level of health care, health care system, Overview of health Science professions, Meaning of Physiotherapy, Scope and utility of physiotherapy, Components of Physiotherapy profession, History of Physiotherapy, Role of physiotherapy in meeting Health Care Needs in India.

Module II (18 Hours)

Hydrotherapy- meaning, methods, precaution in giving the hydrotherapy, Benefits of hydrotherapy, indication and contraindication. Physiological effects of hydrotherapy.

Module III

Thermotherapy : Meaning of Thermotherapy, methods, precaution Physiological effects of Thermotherapy, indication and contraindication, importance. Cryo-Therapy meaning, importance ,methods, indication and contraindication, precaution ,Physiological effects of cryo-therapy .

Module IV (18 Hours)

Massage: Meaning , techniques, indication and contraindication, precaution, importance in sports, Physical benefits of massage with its utility in sports. Electrotherapy: methods, Meaning & Importance, Danger of using Electrotherapy, Benefits of Electrotherapy, indication and contraindication.

Module V (18 Hours)

Exercise therapy- Meaning of therapeutic exercise, kinds and its utility in sports. Importance, techniques.

References

- Sports Physiotherapy-K. C. Shekhar
- Preventive & Corrective Physical Education by George Thomas
- Giving to elderly people –understanding and practical help
- Physiotherapy in Medical conditions by Joan R. Cash

Pedagogical Tools

- Lecture
- Field Work
- Internships
- Organizational Visit
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships
- Fieldwork
- Industrial Visit

Skill Component: Internship - 1 (SNP2CPR0123)

6 Credits

The student will attach himself with a Physiotherapy / Nutrition organization/ Fitness centre approved by the Department for a period of 4 weeks for Industry Training. The student should actively participate in the operations of the organization and should work like any other employee of that organization. At the end of the on-the-job training, the student should prepare a comprehensive report and present the report with the aid of PPT to the corresponding teachers. Student should also produce a certificate of internship from the organization. All the above details should be submitted to the Department for evaluation.

Detailed Syllabus: Semester III

General Component: Environment Science and Human Rights (SNP3CMT0123)

60 Hours 4 Credits

Course Outcomes

- Develop and enhance critical and creative thinking skills.
- Explain the knowledge and skills necessary to address complex environmental issues.
- Develop the sense of awareness among the students about the environment and its various problems.
- Illustrate the students in acquiring the basic knowledge about environment and the social norms that provide unity with environmental characteristics.
- Create a positive attitude about the environment.

Module I (12 Hours)

Multidisciplinary nature of environmental studies Definition, scope and importance Need for public awareness.
Natural Resources: Renewable and non-renewable resources: Natural resources and associated problems.

Ecosystem- Concept, Structure and function. Producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids.

Module II (12 Hours)

Biodiversity and its conservation Biodiversity.

Environmental Pollution, Definition, Causes, effects and control measures of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards.

Solid waste Management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution

Module III (12 Hours)

Laws on Environment

Environment Protection Act

Air (Prevention and Control of Pollution) Act

Water (Prevention and control of Pollution) Act

Wildlife Protection Act

Forest Conservation Act

Issues involved in enforcement of environmental legislation

Public awareness

Module IV (12 Hours)

Sustainable Development Organic farming for sustainable development, Eco friendly constructions and green certification process, Rainwater harvesting, Recycling for maximising utility, Clean Natural energy sources and its utilisation for development, Social forestry.

Role in Environmental Protection- Role of corporates in environmental protection: CSR initiatives, Role of NGOs in environmental protection, Role of individuals groups and communities in environmental protection: case studies Role of media in promoting awareness on the need of environmental protection, Role of international organisations in environmental protection.

Module V (12 Hours)

Human Rights– An Introduction to Human Rights, Meaning, concept and development, Three Generations of Human Rights (Civil and Political Rights; Economic, Social and Cultural Rights).Human Rights and United Nations – contributions, main human rights related organs - UNESCO,UNICEF, WHO, ILO, Declarations for women and children, Universal Declaration of Human Rights.

Human Rights in India – Fundamental rights and Indian Constitution, Rights for children and women, Scheduled Castes, Scheduled Tribes, Other Backward Castes and Minorities. Conservation of natural resources and human rights: Reports, Case studies and policy formulation. Conservation issues of western Ghats- mention Gadgil committee report, Kasthurirangan report. Over exploitation of ground water resources, marine fisheries, sand mining etc.

Internal: Field study

Visit to a local area to document environmental grassland/ hill /mountain

Visit a local polluted site – Urban/Rural/Industrial/Agricultural Study of common plants, insects, birds etc

Study of simple ecosystem-pond, river, hill slopes, etc (Field work Equal to 5 lecture hours)

References

- Environmental Studies, Bharucha, Erach, Text Book of Environmental Studies for undergraduate Courses. University Press, IInd Edition 2013
- Clark.R.S., Marine Pollution, Clanderson Press Oxford
- Cunningham, W.P.Cooper, T.H.Gorhani, E & Hepworth, M.T.2001 Environmental Encyclopedia, Jaico Publ. House. Mumbai.
- Dc A.K.Enviornmental Chemistry, Wiley Eastern Ltd
- Down to Earth, Centre for Science and Environment
- Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assessment, Cambridge University Press
- Jadhav.H, Bhosale.V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi Mekinney, M.L, Schock.R.M. 1996 Environmental Science Systems & Solutions. Web enhanced edition
- Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co.
- Odum.E.P 1971. Fundamentals of Ecology. W.B. Saunders Co. USA)
- Rao.M.N,Datta.A.K. 1987 Waste Water treatment Oxford & IBII Publication Co.Pvt.Ltd.
- Rajagopalan. R, Environmental Studies from crisis and cure, Oxford University Press, Published: 2016
- Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
- Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science
- Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media
- Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication
- Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA)

Human Rights

- AmartyaSen, The Idea Justice, New Delhi: Penguin Books, 2009.
- Chatrath, K. J.S., (ed.), Education for Human Rights and Democracy (Shimla: Indian Institute of Advanced Studies, 1998)
- Law Relating to Human Rights, Asia Law House,2001.
- Shireesh Pal Singh, Human Rights Education in 21st Century, Discovery Publishing House Pvt.Ltd, New Delhi,
- S.K.Khanna, Children And The Human Rights, Common Wealth Publishers,1998. 2011.
- SudhirKapoor, Human Rights in 21st Century,Mangal Deep Publications, Jaipur,2001.
- United Nations Development Programme, Human Development Report 2004: Cultural Liberty in Today's Diverse World, New Delhi: Oxford University Press, 2004

Pedagogical Tools

- Lecture
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Professional Ethics and standards
- Human Values/ Indian Values/ Indian Culture/ Indian Heritage
- Environmental issues
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

General Component: Clinical Orthopaedics & Sports Medicine (SNP3CMT0223)

60 Hours 4 Credits

Course Outcomes

- Explain clinical examination in an Orthopaedic patient and to give first aid.
- Explain the signs and symptoms of fracture and its first-aid.
- Describe the primary treatment for soft tissue injuries and sports injuries.
- Illustrate the first aid in spinal cord injury and burns.
- Illustrate the first aid in Burns.

Module I (12 Hours)

Introduction

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

Traumatology

Fracture-Definition, Types, Signs and symptoms. Fracture healing, complications of fractures. Conservative and surgical approaches. Principles of management- reduction (open/closed, immobilization etc.), subluxation/ dislocations- definition, signs and symptoms, management (conservative and operative)

Module II (12 Hours)

Fractures and dislocations of upper Limb:

Fractures of upper Limb- causes, clinical features, mechanism of injury complications, conservative and surgical management of the following fractures. Fractures of clavicle and scapula. Fractures of greater tuberosity and neck of humerus. Fracture shaft of humerus. Supracondylar fracture of humerus. Fractures of Capitulum, radial head, olecranol, coronoid, and epicondyles. Side swipe injury of elbow. Both bone fractures of ulna and radius. Fracture of forearm- monteggia, galaezzi fracture-dislocation. Chauffer's fracture. Colle's fracture. smith's fracture, scaphoid fracture. Fracture of the metacarpals. Bennett's fracture. Fracture of phalanges (proximal and middle)

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

Hand Injuries

Mechanism of injury, clinical features, and management of the following- crush injuries.Flexor and extensor injuries. Burn injuries of hand.

Fractures and Dislocations of Lower Limb

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

Module III (12 Hours)

Fracture of Spine

Fracture of Cervical Spine- Mechanism of injury, clinical feature, complications (quadriplegia); Management-immobilization (collar, cast, brace, traction); Management for stabilization, management of complication (bladder and bowel, quadriplegia), Clay shoveller's fracture. Hangman's fracture, Fracture odontoid, Fracture of atlas, Fracture of Thoracic and Lumbar Regions- Mechanism of

injury, clinical features, management - conservative and surgical of common fractures around thoracic and lumbar regions, Fracture of coccyx. Fracture of Rib Cage- Mechanism of injury, clinical features, management for fracture Ribs, Fracture of sternum,IVDP,

Traumatic Spinal Cord Injuries

Clinical features, complications, medical and surgical management of Paraplegia and quadriplegia. spinal canal stenosis

Module IV (12 Hours)

Soft Tissue Injuries

Define terms such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, bursitis. Mechanism of injury of each, clinical features, managements- conservative and surgical of the following soft tissue injuries: Meniscal injuries of knee, Cruciate injuries of knee, Medical and lateral, collateral injuries of knee, Lateral ligament of ankle, Wrist sprains. Strains-quadriceps, hamstrings, calf, biceps, triceps etc. Contusions- quadriceps, gluteal, calf, deltoid etc. Tendon ruptures- Achilles, rotator cuff muscles, biceps, pectorals etc.

Module V (12 Hours)

Deformities- upper and lower extremity, congenital deformities- CTEV, CDH,Torticollic, scoliosis, kyphosis, lordosis, flat foot, vertical talus, genu varum and valgum, pes cavus.

Infective conditions- Osteomyelitis, TB spine in major joints. Metabolic bone diseases.

References

- Outline of Fractures - John Crawford Adams.
- Outline of Orthopedics - John Crawford Adams.
- Text book of Orthopedics - Maheswari
- Apley's Orthopedics
- Textbook of Orthopedics and Traumatology- M.N.Natarajan.

Pedagogical Tools

- Lecture
- Field Work
- Internships
- Organizational Visit

- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships
- Industrial Visit

General Component: Family Meal Management (SNP3CMT0323)

60 Hours 4 Credits

Course Outcomes

- Explain the basis of meal management.
- Explain the nutritional requirements of various age groups.
- Design menu plans based on the nutritional requirement of the family.
- Develop skills to impart nutritional counseling to tackle nutritional deficiency.
- Prepare meals based on nutritional requirements for various age groups.

Module I (12 Hours)

Introduction to meal management - balanced diet, food groups & the planning of balance diet.

Food guides for selecting adequate diet . Principles of meal planning

Meal planning for the family.

Indian meal patterns - vegetarian & non-vegetarian.

Food faddism & the faulty food habits.

Nutritive value of common Indian recipes.

Module II (12 Hours)

Nutrition for adults- Reference man and Reference Women, Diet based on Physical activity and Income. RDA for Adults

Nutrition in pregnancy - Physiological stages of pregnancy, nutritional requirements. Food selection, complication of pregnancy. Dietary modifications, RDA

Nutrition during lactation - Physiology of lactation, nutritional requirements , Dietary management, RDA

Module III (12 Hours)

Nutrition during infancy - growth & development, nutritional requirements, breast feeding, infant formula, introduction of supplementary foods.

Nutrition during early childhood (Toddler/Preschool)- Growth & nutrient need, nutrition related problems, feeding patterns.

Module IV (12 Hours)

Nutrition of school children- Nutritional requirement, importance of packed lunch, school lunch

Nutrition during adolescence - Growth & nutrient needs, food choices, eating habits, factor influencing needs.

Module V (12 Hours)

Geriatric nutrition: Physiological and Psychological Changes in Old Age. Factors affecting food intake and nutrient use, nutrient needs, nutrition related problems.

Practical

Planning and nutritional evaluation of diets in relation to activity levels and physiological state.

- Planning and preparation of a balanced diet for a pregnant woman.
- Diet during complication of pregnancy.
- Planning and preparation of a balanced diet for a lactating woman.
- Preparation of weaning foods.
- Planning and preparation of a balanced diet for pre-school child.
- Balanced diet for school going child. Preparation of packed lunch.
- Planning and preparation of a balanced diet for adolescence.
- Planning of meals for adult belonging to different income group.
- Planning meal for senior citizen.

Pedagogical Tools

- Lecture
- Practical Lab
- Group Discussion
- Case studies

Expected Skills, Proficiencies and Values

- Entrepreneurship

- Employability enhancement
- Professional Ethics and standards
- Human Values/ Indian Values/ Indian Culture/ Indian Heritage

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

Skill Component: Sports and Exercise Therapy (SNP3CRT0123)

75 Hours 5 Credits

Course Outcomes

- Describe the aims and techniques of exercise therapy starting and Fundamental positions
- Explain the techniques of functional tests, manual muscle testing, test for coordination, sensation, pulmonary function test etc.
- Differentiate the types and techniques of passive and active movements
- Explain various balance regaining techniques
- Different types of postures
- Demonstrate various walking aids and its gait training.
- Describe hydrotherapy and group exercise

Course Outline

Module I (15 Hours)

Introduction to Exercise Therapy

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.

Module II (15 Hours)

Methods of Testing

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

Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications &

Limitations, Techniques of MMT for group & individual muscles: Techniques of MMT for upper limb/ Techniques of MMT for lower limb/Techniques of MMT for spine.

Anthropometric Measurements: Muscle girth-biceps, triceps, forearm, quadriceps, calf

Static power Test, Dynamic power Test, Endurance-test, Speed test

a) Tests for Co-ordination

b) Tests for sensation

c) Pulmonary Function tests

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

e) Measurement of the angle of Pelvic Inclination

Module III (15 Hours)

Relaxation

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.

Passive Movements

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.

Active Movements

Definition of strength, power & work, endurance, muscle actions. Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction & relaxation muscle fibre type, motor unit, force gradation.

Causes of decreased muscle performance Physiologic adaptation to training: Strength & Power, Endurance.

Types of active movements

Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses.

Active Assisted Exercise: principles, techniques, indications, contraindications. effects and uses Assisted - Resisted Exercise: principles, techniques, indications, contraindications, effects and uses.

Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses

Types of resisted exercises: Manual and Mechanical resistance exercise. Isometric exercise.

Dynamic exercise: Concentric and Eccentric, constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed - Chain exercise.

Specific exercise regiments.

Isotonic: de Lormes, Oxford, Mac Queen, Circuit weight training

Isometric: BRIME (Brief Resisted Isometric Exercise), Multiple Angle Isometrics,

Isokinetic regiments.

Module IV (15 Hours)

Proprioceptive Neuromuscular Facilitation

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

Suspension Therapy Definition, principles, equipment& 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

Function a Re-education

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

Aerobic Exercise

Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation 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.

Stretching

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.

Introduction to Manual Therapy & Peripheral Joint Mobilization

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

Module V (15 Hours)

Balance

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.

Co-ordination Exercise

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.

Posture

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

Hydrotherapy

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

Individual and Group Exercises

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

References

- Therapeutic exercise by Barbara Bandy
- Therapeutic exercise by Carolyn Kisner
- Principles of exercise therapy by M. Dena Gardiner
- Practical Exercise therapy by Hollis Margaret
- Therapeutic exercise by Sydney Litch
- Therapeutic exercise by Hall & Brody
- Therapeutic exercise by Basmajjian
- Physical Rehabilitation by o'Sullivan
- Therapeutic massage by Sinha
- Principles of muscle testing by Hislop

Pedagogical Tools

- Lecture
- Internships
- Organizational Visit
- Role Play
- Group Discussion

- Use of models
- Use of Specimens

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships
- Fieldwork
- Industrial Visit

Skill Component: Electrotherapy (SNP3CRT0223)

75 Hours 5 Credits

Course Outcomes

- Demonstrate the technique for patient evaluation, receiving the patient and positioning the patient for treatment using electrotherapy.
- Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.

Module I (15 Hours)

Introductory Physics (Familiarisation only)

Electricity definition, types, Static electricity, Current Electricity. Magnetism: Definition, properties, electro-magnetic induction, electro-magnetic spectrum. Valves, transformers, types, principles, construction and working. Ionization: Principles, effects of various technique of medical ionization.

Module II (15 Hours)

Therapeutic Electricity: Low frequency Currents

Basic types of current-Direct Current: types, physiological & therapeutic effects. Alternating Current. Types of Current used in Therapeutics, Modified DC, Faradic Current, Galvanic Current. Modified AC, Sinusoidal Current, Diadynamic Current.

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.

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. Sinusoidal Current &Diadynamic Current in Brief. HVPGS- Parameters &it's uses. Ionization / Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhidrosis, wound healing. Cathodal /Anodal galvanism. Micro Current & Macro Current. Types of Electrical Stimulators:

NMEs-Construction Component, Neuro muscular diagnostic stimulator-construction component, Components and working Principles

Module III (15 Hours)

Principles of Application

Electrode tissue interface, Tissue Impedance, Types of Electrode, Size & Placement of Electrode- Water bath, Unipolar Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.

Nerve Muscle Physiology

Action Potential, Resting membrane potential, Propagation of Action Potential, Motor unit, synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, Stimulation for Tissue Repair.

Module IV (15 Hours)

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.

Electro-diagnosis

FG Test. 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. Nerve conduction velocity studies. EMG: Construction of EMG equipment. Bio-feed back

Module V (15 Hours)

Medium Frequency

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. Russian Current. Rebox type Current.

References

- Claytons Electrotherapy by Forster & Plastanges
- Electrotherapy Explained by Low & Reed
- Clinical Electrotherapy by Nelson
- Electrotherapy Evidene based practice by Sheila Kitchen
- Physical agents by Michile Cameroon
- Principles of Electrotherapy by Michile Cameroon
- Thermal agents by Susan Michlovitz

Pedagogical Tools

- Lecture
- Internships
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships
- Industrial Visit

Skill Component: Physiology of Sports and Exercise (SNP3CRT0323)

75 Hours 5 Credits

Course Outcomes

- Understanding human anatomy and physiology.
- Understanding the relation of nutrients for athletic and non-athletic population.
- Understanding of kinaesthetic movement and the physiological effects of exercise.
- Recognizing and understanding the mental & physical domains of injury prevention and care.
- Able to manage, communicate, and network effectively within various health and exercise settings.

Module I (15 Hours)

Body composition: An overview of human body composition, Factors influencing body composition-age, sex, etc. with special emphasis on exercise.

Energy Expenditure during rest and physical activity: Energy transfer in the body. Energy generating capacity of humans. Respiratory quotient for different nutrients. Energy costs of a variety of sports and physical activities.

Module II (15 Hours)

The acute and chronic effects of exercise on the respiratory, muscular, cardiovascular, neurological and endocrine systems. The short and long term physiological adaptations of the main body systems to exercise and training

Training the aerobic and anaerobic energy systems: Application of the principles of training to aerobic and anaerobic training. Developing aerobic and anaerobic training programmes. Maintenance of aerobic and anaerobic fitness.

Module III (15 Hours)

Components of Fitness: Health related and skill/performance related components of fitness, Principles of overload, progression, specificity, reversibility, placement, adaptation, individual difference and enjoyment, Principles of warm-up and cool-down, Phases of free-movement warm up.

Module IV (15 Hours)

Training the muscular system for strength and endurance: Measurement of muscular strength and endurance. Gender differences in strength. Types of resistance training. Application of the principles of training to strength training.

Resistance Training: Local muscular endurance training. Strength training, Safe lifting technique, Safety in the weights room, Types of resistance training, Phases of a resistance training session, Terminology of resistance training, Spotting, Observation and correction.
Exercise prescription for the general population,

Module V (15 Hours)

Exercise & skeletal fitness: Bone physiology-structure of bone, bone formation and remodelling. Types of joints. Bone injuries during exercise training. Exercise and bone health

Exercise Physiology (Practical)

Theoretical explanation and demonstration and assessment of cardio respiratory fitness

Theoretical explanation and demonstration of Cardio respiratory exercises (VO2 Max)

Assessment of muscular fitness: Muscle strength, endurance and flexibility exercises

(Bench press, Jumps, Push ups, Sit and Reach Test)

References

- Basic Anatomy of Physiology of exercise by Piyush Jain
- Introduction to anatomy & Physiology of Exercise by Sandhya Tiwari
- Essential of Physical Education & Sports by Dr. Ajmer Singh & others
- Essential of Exercise Physiology – Lessy G. Shower
- Devries, H.A.Physiology of Exercise for Physical Education and Athletics. London:

Pedagogical Tools

- Lecture
- Internships

- Organizational Visit
- Practical Lab
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships

Skill Component: OJT- 2 (SNP3OJT0123)

3 Credits

The student will attach himself with a Physiotherapy or nutrition organization approved by the Department for a period of 2 weeks for Industry Training. The student should actively participate in the operations of the organization and should work like any other employee of that organization. At the end of the On the job Training, the student should prepare a comprehensive report) and present the report with the aid of PPT to the corresponding teachers. Student should also produce a certificate of internship from the organization. All the above details should be submitted to the Department for evaluation.

Detailed Syllabus: Semester IV

General Component: Sports Psychology & Counselling (SNP4CMT0123)

60 Hours 4 Credits

Course Outcomes

- Explain theories of psychology and role in sports.
- Explain key concepts and theories of specific areas including personality, motivation, anxiety/arousal, community engagement, groups and teams.
- Demonstrate theoretical perspectives from sport psychology in real world contexts.
- Explain methodologies used within sport psychology, and develop an awareness of Research ethics.
- Describe various things related to sport psychology, and communicate the results of these investigations in a logical and clear manner.

Module I (12 Hours)

Sports Psychology: Importance and need of Psychological Training in Sports.

Techniques to Improve Performance: creative Visualisation, Desensitization, Auto-suggestion Therapy, Rational Thinking for specific purpose and Progressive Relaxation procedure

Mind- The mechanics of Flight or Fight Response, The Physical Disruptions and the Mental Disruptions.

Module II (12 Hours)

The Emotional Contents of Sports: Intrinsic Pressures, Social Pressures & Personal Pressure.

The Sports Emotional – Reaction profile: Factors affecting performance like Desire, Assertiveness, Sensitivity, Tension Control, Personal Accountability, Self-discipline, Confidence, Concentration, Consistency, Commitment and Trait Interaction.

Module III (12 Hours)

Mental Preparation for the Game and Mental Practice for the play. Rational Emotive Mental Training Programme for sportsman using Mind-Body co-ordination.

Anxiety, stress arousal and their effects on sports performance.

Motivation and techniques and its impact on sports performance.

Module IV (12 Hours)

Understanding the problems of Sportsman - Lack of adequate motivation and concentration, Fear of Insecurity & Rejection, Fear of Making a wrong move, Not able to make the use of maximum available resources (Physical & Mental) Psychological Barriers between student & teacher and Drugs

Module V (12 Hours)

Counselling in sports: Importance & Need of Psychological Counselling, Types of Counselling like Individual, Group, Team etc. Effective Counselling Methods & Techniques, Case studies, Role Plays and Discussion

References

- Sports Psychology by Yadvinder Singh, Sports Publications
- Sports Psychology Basics by Andrew Caruso, Reedswain Publications
- Key Concepts in Sports Psychology by Ellis Cashmore, Routledge foundation
- A Comparative Study of Sports Psychology by Dharmendra P Bhatt, Sports Publications
- Basic Aspect of Sport Psychology by D C Lal, Sports Publications
- Essential Sport Psychology by Murphy Shane, Human Kine Publications
- Doing Sport Psychology by Andersen Mark, Human Kine Publications
- Sport Psychology: Contemporary Themes by Lavallee David, Palgrave M Publications
- Sport Psychology Interventions by Murphy Shane M, Human Kine Publications
- Sport Psychology (with Infotrac) by Arnold D Leunes, Wadsworth Publishing Company.
- Coaches Guide To Sport Psychology by Rainer Martens, Human Kinetics Publishers
- Learning Experiences In Sport Psychology, Human Kine Publications,
- Sport Psychology: The Key Concepts by Cashmore Ernest, Routledge Publications
- Applied Sport Psychology: Personal Growth To Peak Performance by 4th Edition Williams, Academic Internet Publishers.

Pedagogical Tools

- Lecture

- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

General Component: Nutrition for Sports and Exercise (SNP4CMT0223)

60 Hours 4 Credits

Course Outcomes

- Explain the characteristics, physiology and body composition needs in sports.
- Develop knowledge on sports specific nutrition and hydration guidelines.
- Explain the role of ergogenic aids- their dose, safety and efficacy to enhance sports performance.
- Describe the principles of diet planning for different age groups.
- Explain principles and factors influencing exercise management.

Module I (12 Hours)

Introduction to sports nutrition: Historical approaches to exercise and nutrition, Role of macronutrients, Reference sports person - dietary recommendations.

Carbohydrates intake and exercise: Pre exercise diet, Carbohydrate supplementation during exercise, Post exercise diet, Carbohydrate utilization during exercise, Type of exercise: light, moderate static and heavy, Gluconeogenesis as an energy source, Lactate metabolism - fuel for muscular work, Carbohydrate metabolism and fatigue

Module II (12 Hours)

Lipids: Fat metabolism and utilization during exercise, Contribution to energy production during exercise, Training adaptations and fat utilization

Proteins: Amino acid metabolism associated with exercise, Protein turnover associated with exercise, Physical activity and protein requirement, Use of specialized protein supplements - whey protein; BCAA

Module III (12 Hours)

Vitamins and minerals and exercise performance: Fat and water-soluble vitamins, Minerals with special reference to iron-requirements and deficiency in athletes, negative iron balance, iron supplementation and toxicity, zinc-intake, depletion and supplementation, copper, chromium status and exercise, phosphorus (phosphate loading), fat loading. Antioxidant and exercise performance

Training diet, pre exercise meals - intake during exercise, Feeding after exercise - liquid v/s solid meals

Module IV (12 Hours)

Water: Significance of hydration and consequences of dehydration, Practical indexes of hydration status, Replacement strategies for sports person- types of fluids, fluid volume, composition, Sports drinks

Ergogenic aids and sports supplements - classification, types - drugs, nutritional ergogenic aids - effects and safety concerns

Module V (12 Hours)

Nutritional, health and psychological concerns of sports persons

Nutritional needs and bone health of athletes' triad

Sports injury and effects of over training - nutritional significance

Principles of diet planning for sports persons with special reference to nutrients and water needs

Concept of energy expenditure and calculation of EE

Planning a day's diet for the following sports activities for different age groups and sexes: Gymnastics, Athletics, Swimming, Cricket, Football, Diet considerations

Fitness assessment - height, weight and body composition. Body fat determinations by different methods

References

- Bernadot dan (1999) Nutrition for Serious Athletes, Human Kinetics USA.
- Brouns Fred and Caustan – Cargill (2002) Essentials of Sports Nutrition – 2nd edition
- John Wiley and Sons, England.
- Burke Louse and Deakin Vicky (2006) Clinical Sports Nutrition, McGraw – Hill Pvt.
- Ltd. Australia.
- Summerfield Lianne M (2001), Nutrition Exercise and Behavior An integrated
- approach to weight management, Belmount (USA). Wadsworth/Thompson Learning

- Wolinksy Ira (1998) Nutrition in Exercise and Sports CRC press Boca Raton
- Wolinksy Ira, Drishill Judy (1997) Sports and Nutrition Vitamins and Trace elements,
- CRC Press BY.
- Wolinskoy Ira, Driskell J. (2004) Nutritional Ergogenic Aids, CRC Press NY.

Pedagogical Tools

- Lecture
- Internships
- Organizational Visit
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar

Credit for Merit

Skill Component: Therapeutic Nutrition (SNP4CMT0323)

60 Hours 4 Credits

Course Outcomes

- Describe the role of dietician.
- Differentiate the different types and metabolic changes of fever and the necessary modification in diet for a fever patient.
- Describe the role of diet in cardio-vascular diseases and give diet counseling for cardiac patients.
- Describe about different types of diabetes and give advice about diet modification for diabetic patients
- Explain the role of diet in reducing body weight.

Module I (12 Hours)

Introduction to Therapeutic Nutrition - Routine hospital diets, Special feeding methods- Enteral feeding , TPN.

Feeding the patient- Psychology of feeding patients

Role of a Dietitian, Indian Dietetic Association (IDA)- Functions, RD exams

Module II (12 Hours)

Diet in obesity and Leanness- Types causes, dietary modifications complications.

Diet in Diabetes mellitus- Aetiology, symptoms, Types

Factors affecting normal blood sugar level, Diagnosis, Treatment, Dietary modifications, food exchange system. Glycemic Index, Glycemic load, Complications of diabetes, Nutrition in complication of diabetes, hypoglycaemic agents and supportive therapy.

Diet in cardiovascular diseases- Aetiology, symptoms and dietary management of Atherosclerosis, Hypertension

Module III (12 Hours)

Diet in gastrointestinal diseases - Aetiology, symptoms and dietary management of constipation, diarrhoea and peptic ulcer.

Aetiology, Symptoms and dietary management of Oesophagitis, Gastro

Oesophageal Reflux Disease (GERD), Dyspepsia, Gastritis, Peptic Ulcer, Constipation, Diarrhoea, Ulcerative colitis, Flatulence, Irritable bowel syndrome, Inflammatory bowel disease, Diverticulitis, Dumping syndrome, Malabsorption Syndrome – Lactose intolerance, Steatorrhoea, Celiac disease, Tropical sprue.

Module IV (12 Hours)

Modification of diet in Fever, metabolism in fever, general dietary consideration

Diet in Liver Disorders - Cirrhosis- Causes, Symptoms, Dietary management.

Hepatitis - Causes, Symptoms, Dietary management,Hepatocarcinoma

Cholelithiasis

Diet in Renal Diseases- Nephritis, Nephrosis, Acute and Chronic Renal Failure, Renal calculi, dialysis. Causes, symptoms and dietary management.

Module V (12 Hours)

Food Allergy- Elimination Diets

Diet in Cancer

Nutrition for Critical Care Patients

References

- Robinson C H, Lawler M R, Cheweth W L and Gaswick A E (1986), Normal andTherapeutic Nutrition, 17th Edition, Mac Milan Publishers
- Mohan K L, Krause M V, (2002), 2nd Edition. Food, Nutrition and Diet Therapy, WS Suder's Co., Philadelphia
- Antia P, Clinical Dietetics and Nutrition, 2nd Edition, Oxford University Press.
- Guthrie H A, Picciano M F, (1995), Human Nutrition, Mosby, St. Louis Missionary.
- Michael Sharon (1994), Complete Nutrition, Avery publishing Group, New York
- Garrow J S, James W P T, Ralph A, (2000), Human Nutrition and Dietetics, 10th Edition, Churchill, Livingstone, London.

Pedagogical Tools

- Lecture
- Internships
- Organizational Visit
- Practical Lab
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Human Values/ Indian Values/ Indian Culture/ Indian Heritage
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar

Credit for Merit

Skill Component: Physiotherapy in Orthopaedics & Sports Medicine (SNP4CRT0123)

90 Hours 6 Credits

Course Outcomes

- Explain the types, classification, signs and symptoms, complications of different fractures and its management.
- Illustrate the P.T.management of various degenerative conditions.
- Describe orthopaedic surgeries and its PT Management.
- Explain the clinical features, surgical, medical and PT. management of infective conditions.
- Explain the biomechanical principles of orthotic and prosthetic application.

Module I (18 Hours)

PT assessment for Orthopaedic 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.

Module II (18 Hours)

Fractures

Types, classification, signs and symptoms, complications, Fracture healing - factors affecting fracture healing. Principles of fracture management- reduction - open and closed, immobilization- sling, cast, brace, slab, traction - manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing. PT management in complications - early and late -

shock, compartment syndrome, VIC, fat embolism, delayed and mal union, RSD, myositis ossificans, AVN, pressure sores etc. Physiotherapy assessment in fracture cases. Aims of PT management in fracture cases-short and long term goals. Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.

Specific fractures and dislocations

PT assessment and management of upper limb fractures and dislocations. PT assessment and management of lower limb fractures and dislocations including pelvis. PT assessment and management spinal fractures.

Selections and application of physiotherapeutic techniques

Maneuver's modalities for preventive, curative and rehabilitative means in all conditions.

Principles of various schools of thought in manual therapy (Briefly Maitland and Mc kenzie).

Module III (18 Hours)

Degenerative and Inflammatory conditions

Definition, signs and symptoms, clinical features, pathophysiology, 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. Periarthritishoulder.

Infective conditions

Definition, signs and symptoms, clinical features, pathophysiology, 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.

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

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.

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.

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.

Effects of spinal traction

Types of traction, modes of application, indications for spinal traction, contraindications, precautions, Limitations of traction.

Osteoporosis-Causes, predisposing factors, investigations and treatment.

Orthopaedic 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, inter-positional arthroplasty and total replacement: Tendon transplant, Soft tissue release-tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Re-attachment of limbs, External fixators, Synovectomy.

Module IV (18 Hours)

Shoulder joint

Shoulder instabilities, TOS, RSD, Impingement syndrome-conservative and Post-operative PT management. Total shoulder replacement and Hemi replacement. Post-operative PT management. AC joint injuries - rehabilitation.

Rotator cuff tears – conservative and surgical repair. Subacromial decompression-post operative PT management.

Elbow and forearm-Excision of radial head-post operative PT management. Total elbow arthroplasty-Post operative PT management.

Wrist and Hand - Total wrist arthroplasty. Repair of ruptured extensor tendons. Carpal tunnel syndrome. Flexor and extensor tendon lacerations-Post operative PT management.

Hip - Joint surgeries- Hemi and total hip replacement-post operative PT management Tendonitis and bursitis-management.

Knee - Lateral retinacular release, chondroplasty-post operative management. Realignment of extensor mechanism. ACL and PCL reconstruction surgeries - Post operative rehabilitation. Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome – conservative management. TKR-rehabilitation protocol. Patellar tendon ruptures and Patellectomy-rehabilitation.

Ankle and foot - Ankle instability, Ligamentous tears-post operative management.

Module V (18 Hours)

Sports Physiotherapy

Physical fitness. Stages of soft tissues healing. Treatment guidelines for soft tissue injuries- Acute, Sub-acute and chronic stages. Repair of soft tissues-rupture of muscle, tendon and Ligamentous tears, soft tissue injuries-prevention and rehabilitation of Lateral ligament, sprain of ankle. Rotator cuff injuries-collateral and Cruciate injuries of knee. Meniscal injuries of knee. Supraspinatus and Bicipital tendonitis, prepatellar and Subacromial bursitis. Tennis and Golfer's elbow. Hamstring strains, Quadriceps contusion, TA rupture. Dequervain's tenosynovitis., Trigger and Mallet finger, Plantar fascitis. Wrist sprains.

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

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

References

- Tidy's Physiotherapy
- Textbook of orthopedics by Cash
- Clinical Orthopedic rehabilitation by Brotzman
- Orthopedic Physiotherapy by Jayant Joshi
- Physical Rehabilitation Assessment and Treatment by O' Sullivan Schmitz
- Sports Physiotherapy by Maria Zuluaga

Pedagogical Tools

- Lecture
- Field Work
- Internships
- Practical Lab
- Group Discussion
- Case studies

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships
- Organizational study

Skill Component: Normal and Therapeutic Nutrition Practicals (SNP4CRP0123)

90 Hours 6 Credits

Course Outcomes

- Standardization of common food preparations.
- Planning , preparation and nutritional evaluation of diets in relation to activity levels and physiological state.
- Develop diet plans for therapeutic conditions.
- Impart diet counselling for normal and therapeutic conditions

I Normal Nutrition Practical

1. Planning and preparation of a balanced diet for a pregnant woman.
2. Diet during complication of pregnancy.
3. Planning and preparation of a balanced diet for a lactating woman.
4. Preparation of weaning foods.
5. Planning and preparation of a balanced diet for pre-school child.
6. Balanced diet for school going child. Preparation of packed lunch.
7. Planning and preparation of a balanced diet for adolescence.
8. Planning of meals for adult belonging to different income group.
9. Planning meal for senior citizen.

II Therapeutic Nutrition Practical

Plan and prepare the suitable diets for the following conditions:

1.Clear fluid diet

2. Fullfluid diet

3. Soft bland diet

4. Low calorie, high fibre diets for Obesity, Diabetes mellitus, Cardiovascular disease, hypertension

5. Bland diets for Peptic Ulcer, Irritable Bowel syndromme, Diarrhoea

6. High residue diet for constipation

7. Diet for Viral hepatitis and cirrhosis

8. Diets in fever and infections

9. Diet for Chronic Renal Failure

10. Planning, preparations and calculation of diet in Cancer.

11. Low and medium cost diets for P.E.M.

12. Diet for iron deficiency Anemia & vitamin A deficiency

13. Prepare a diet counselling plan for Pregnant mother, Diabetes Mellitus, Obesity, Fever, Liver Cirrhosis, Chronic Renal Failure, Cancer

14. Develop Visual aids for diet counselling - Iron deficiency anaemia, Diabetes mellitus, Obesity.

Pedagogical Tools

- Practical Lab
- Group Discussion
- Case studies

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards
- Internal Evaluation Methods
- Attendance
- Written Exam

Skill Component: Internship - 2 (SNP4CPR0123)

6 Credits

The student will attach himself with a retail organization approved by the Department for a period of 4 weeks for Industry Training. The student should actively participate in the operations of the organization and should work like any other employee of that organization. At the end of the On the job Training, the student should prepare a comprehensive report) and present the report with the aid of PPT to the corresponding teachers. Student should also produce a certificate of internship from the organization. All the above details should be submitted to the Department for evaluation

Detailed Syllabus: Semester V

General Component: Research Methodology and Statistics (SNP5CMT0123)

60 Hours 4 Credits

Course Outcomes

- Explain the importance of quantitative and qualitative research.
- Explain the relevance and the application of statistics.
- Explain techniques of qualitative analysis in Research.
- Develop research questions and proposals.
- Describe various formats of writing up a research report

Module I (12 Hours)

Introduction to Research

Basic elements of scientific method: concepts, conceptual and operational definitions, assumptions, hypothesis, theory, law. Significance of Research, Types of Research

Review of Literature, Identification and formulation of research problems. Need and importance of theoretical frame work in research

Research design: definition, importance and types, explorative, descriptive, diagnostic and experimental methods, Evaluative research- types, steps.

Module II (12 Hours)

Research Process

Research proposal: meaning and major steps of a research proposal.

Formulation of objectives, hypothesis, variables and levels of measurement

Scaling Techniques

Methods & Tools of data collection – observation, questionnaire, interview schedule, interview guide, Steps and guidelines in the construction of research instruments

Reliability, Internal and external validity

Population and sampling. Sampling definition, sampling theory, purpose and types-probability and non-probability sampling.

Module III (12 Hours)

Sources and types of data: primary and secondary, quantitative and qualitative data.

Tabulation of data – purpose and basis of classification.

Frequency distribution-construction of frequency tables, graphic presentation of data- Bar chart, pie chart, histogram, frequency curve and ogive. Selection of appropriate statistical methods

Module IV (12 Hours)

Quantitative Analysis

Nature and purpose of statistics – use of statistical methods and limitations of statistics

Statistical Procedures

Descriptive statistics- Measures of central tendency: Mean, median, mode.

Measures of variability - range, Standard Deviation, uses-co-efficient of variation.

Inferential statistics - Correlation: Meaning and computation Correlation:

Pearson's Coefficient of correlation, Spearman's Rank correlation.

Normal distribution

Significance tests: Pearson's chi-squared,'t' test, analysis of variance-one-way - Relevance, application and interpretation.

Use of software packages in data analysis – SPSS. Process and various statistical procedures using SPSS, interpretation and presentation of the statistical findings

Module V (12 Hours)

Major components of a research report.

Report writing and presentation of Report.

Plagiarism. Publication Ethics.

References

- Aczel Amir D., (1995). Statistics: Concepts and Applications. Richard D. Irwin Inc.

- Alan Bryman, (2004) Social Research Methods. New York : Oxford University Press
- Albright Christian S; Winston Wayne L; Zappe Christopher, Data Analysis and
- Bradley James W; Schaefer Kurt C., (1998).Uses and Misuses of Data and Models: Mathernatization of the Human Sciences. The Sage Pub.,
- Chow Siu L., (1996). Statistical Significance: Rationale, Validity and Utility, Sage Pub.
- Cramer Duncan, (1999). Fundamental Statistics for Social Research: Step-by-Step Calculations and Computer Techniques using SPSS for Windows, New York :Routledge.
- Darin Weinberg, (2002). Qualitative Research methods, UK : Blackwell publishing
- Earl Babbie, (1998) Adventures in Social research using SPSS. New Delhi : Pine forge press
- Elifson K., (1998). *Fundamentals of Social Statistics*. New York : McGraw-Hill.
- Fredman David , et.al. (1998). *Statistics*. New York : Norton & Co.

Pedagogical Tool

- Lecture
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Employability enhancement
- Gender Empowerment
- Professional Ethics and standards
- Internal Evaluation Methods
- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

General Component: Biomechanics (SNP5CMT0223)

60 Hours 4 Credits

Course Outcomes

- Explain the basic concepts in Biomechanics: Kinematics and Kinetics.
- Explain the joint and muscle structure and function and its effects in injury and aging.
- Develop the knowledge of Biomechanics of vertebral column, thorax and chest wall including ventilatory motions.
- Explain the Biomechanical structure and function of Tempero mandibular Joint and peripheral joints and effects of injury and aging.
- Develop the knowledge of the posture and gait its kinematics and kinetics

Module I (12 Hours)

Basic Concepts in Biomechanics: Kinematics and Kinetics

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

Module II (12 Hours)

Joint structure and Function

Joint design, Materials used in human joints, General properties of connective tissues, Human joint design, Joint function, Joint motion, General effects of disease, injury and immobilization.

Muscle structure and function

Mobility and stability functions of muscles, Elements of muscle structure, Muscle function, Effects of immobilization, injury and aging

Module III (12 Hours)

Analysis of Posture and Gait

Static and dynamic posture, postural control,biomechanic, 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.

Module IV (12 Hours)

Temperomandibular Joint -General features, structure, function and dysfunction, biomechanics, kinetic and kinematics

Biomechanics of the peripheral joints

The shoulder complex: Structure and components of the shoulder, complex and their integrated function. The elbow complex: Structure and function of the elbow joint - humeroulnar and humeroradial articulations, superior and inferior radioulnar joints: mobility and stability of the elbow complex, the effects of immobilization and injury.The wrist and hand complex: Structural components and functions of the wrist complex; structure of the hand complex; prehension; functional position of the wrist and hand. The hip complex: structure and function of the hip joint: hip joint pathology - arthrosis, fracture, bony abnormalities of the femur. The knee complex: structure and function of the knee joint - tibiofemoral joint and patellofemoral joint; effects of injury and disease.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.

Module V (12 Hours)

Biomechanics of the Thorax General structure and function, Rib cage and the muscles associated with the rib cage, Ventilatory motions: its coordination and integration, Developmental aspects of structure and function, Changes in normal structure and function in relation to pregnancy, scoliosis and COPD.

Biomechanics of the vertebral column, General structure and function, Regional structure and function- Cervical region, thoracic region, lumbar region, sacral region, Muscles of the vertebral column, General effects of injury and aging.

References

- Joint Structure and Function: A comprehensive Analysis. JP Bros Medical publishers, New Delhi
- Brunnstrom, Clinical Kinesiology, JP Bros Medical publishers, Bangalore. 5th Ed 1996, 1st Indian Ed 1997.
- Clinical Kinesiology for Physical Therapist Assistants, JP Bros Medical publishers, Bangalore. 1st Indian Ed 1996.

Pedagogical Tools

- Lecture
- Internships
- Organizational Visit
- Role Play
- Group Discussion
- Case studies

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships
- Industrial Visit

General Component: Weight Management, Rehabilitation and Fitness (SNP5CMT0323)

60 Hours 4 Credits

Course Outcomes

- Describe the current prevalence of overweight and obesity.
- Identify risk factors and diseases associated with overweight/obesity.
- Identify genetic, biologic, and environmental contributors to weight status.
- Distinguish among key methods used to measure body composition and body mass index.
- Recognize current evidence-based recommendations for assessment and treatment of weight management.

Module I (12 Hours)

Adult and Childhood obesity, Prevalence, Types, etiology, Theories of obesity, Factors affecting, Comorbidity. Management through- Long term and short-term measures, Nutrition, Exercise, pharmaceutical, Surgical, Stress Management & Lifestyle modification.

Module II (12 Hours)

Fitness: definition, principles(FITT), Components of fitness- Total Fitness (health related fitness) Body Composition and types, Cardio respiratory Fitness, Muscular endurance, strength, Flexibility its types, methods Athletic Fitness- Balance, Coordination, , power, Agility, reaction Time etc. Benefits of exercise, Types of Exercise including Aerobics, spinning, Tai Chi, Yoga, weight training, strength training, Circuit training, resistance (strength) training its method and benefits.

Module III (12 Hours)

Weight Management : Meaning of weight management, Concept of weight management in modem era, Factor affecting weight management and values of weight management, Common Myths, precaution(safety in the weights room, safe lifting techniques, dos and don'ts) human body category (ectomorph, mesomorph, endomorph) Equipment commonly used in Fitness Industry, their advantages and limitation. Care (warm up and cool down) and cure in rehabilitation .

Module IV (12 Hours)

Exercise for weight gain, Benefits of weight training for women, muscle development and improving muscle tone. Exercise for weight loss. Strengthening the joints and bones and increasing flexibility (upper body, lower body)

Module V (12 Hours)

Health assessment before starting an exercise programme. Therapeutic exercise and program designing for specific demands including specific joint problems, osteoporosis, arthritis, blood pressure, Diabetes and CVD. Precaution and indicators for stopping exercise and necessary emergency procedures (CPR, bandaging).

References

- Edward L. fox and Donald K Mathews (1985). CBS College Publishing. Japan
- Present Knowledge in Nutrition; Ed, Myrtle L. Brown, ILSI Press.
- David C. Nieman , Fitness and Sports Medicine, A Health related Approach, 3rd
- edition, 1995
- Bases of fitness- Edward L. fox , Timothy E. Kirby and Ann Roberts Fox (1987)
- Measurement and evaluation for Physical Educators - Don Kirkendall, Joseph J Gruber
- and Robert E. Johnson. 1987. Human kinatics Publishers Inc.
- The Physiological Basis of Physical Education and Athletics, by E.L.Fox and
- D.K.Mathews, Holt-Saunders, 1981.

Pedagogical Tools

- Lecture
- Field Work
- Internships
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships

Skill Component: Physiotherapy in Neurology& Neurosurgery (SNP5CRT0123)

75 Hours 5 Credits

Course Outcomes

- Explain neuro physiological techniques and its application.
- Describe about the paediatric examination
- Describe the evaluation and management of brain and spinal cord disorders.
- Explain the management of cerebellar spinal cord and muscle disorders.
- Describe the evaluation and management of peripheral nerve injuries and disorders.

Module I (15 Hours)

Neurological Assessment

Required materials for examination, Chief complaints. History taking - Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function - Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning and judgement, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes – Developmental reflexes, deep tendon reflexes, Superficial reflexes sensory examination, Superficial, Deep and Cortical sensations, Special tests - Romberg's Kernig's sign, Brudenzki sign, Tinels's sign, Slum test, Lehdrmitte's sign. Bells Phenomenon. Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign etc, Balance examination, coordination examination, Gait analysis - Kinetics & Kinematics, (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales- Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading, Differential diagnosis.

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

Module II (15 Hours)

Neuro-physiological Techniques Concepts, principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNN, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, motor relearning programme, Contemporary task-oriented approach, Muscle re-education approach and Constraint induced movement therapy.

Paediatric Neurology

Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management- History, observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Risk babies, minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida and Syringomyelia.

Module III (15 Hours)

Evaluation and Management of Brain and Spinal Cord Disorders

History, observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis and Multiple sclerosis.

Evaluation and Management of Cerebellar Spinal Cord and Muscle Disorders

History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, Short & Long Term goals,

Management of systemic complications. Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syndrome, spinal tumors, Spinal cord injury, Transvers myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post-Polio Syndrome.

Module IV (15 Hours)

Evaluation and Management of Peripheral Nerve Injuries and Disorders

History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical complications, Use of various Neurophysiological approaches & Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome. Lumbosacral plexus lesions, Phrenic & intercostal nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudental nerve palsy.

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

Module V (15 Hours)

Pre and Post-surgical assessment and treatment of 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 haemorrhages, epilepsy, Parkinson's disease. Chorea, Haemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis, Arteriovenous malformations and Spina bifida.
Applied Yoga in Neurological conditions.

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.

References

- Tidy's Physiotherapy.
- Cash's Textbook of Neurology for Physiotherapists
- Neurological Rehabilitation by D Umphred
- Physical Rehabilitation Assessment and Treatment – O'sullivan Schmitz
- Elements of paediatric Physiotherapy:Eckersley

Pedagogical Tools

- Lecture
- Internships
- Role Play
- Group Discussion
- Case studies

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards
- Human Values/ Indian Values/ Indian Culture/ Indian Heritage

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

- Internships
- Fieldwork
- Organizational Study

Skill Component: Sports Specific Nutrition (SNP5CRT0223)

75 Hours 5 Credits

Course Outcomes

- Learn the different types of sports and the features
- Develop an insight on the nutritional needs of different sports
- Identify the methods to estimate the energy needs of different sport events
- Develop diet plans for the sports person based on the type of sports

Module I (15 Hours)

Nutrition for popular team sports (Hockey, Football, Volleyball, Kabaddi and Cricket)
Playing position and rules of the game; Basic physiology of playing team sports; Physique mapping for each event (body composition).
Determining position wise fuel need for Training and Competition; Quantity and timing of nutrient intake; Current research on position-specific nutrition needs and fuel utilisation.
Current literature suggestions on food intake and recovery strategies; Supplement usage and Dietary periodisation among the athletes; Case studies on team sports.

Module II (15 Hours)

Nutrition for Athletics,
Athletics (Sprinters, middle and long distance, field events): Physiological variations and differences in energy systems; Fuel utilisation across various track and field events; Body composition; Dietary guidelines and nutrient requirements; Distribution of macronutrients in the diet; Guidelines for fuel during different

phases of training and competition; Nutrient timing; Travel nutrition; Ergogenic aids commonly used for performance; Case studies of athletes.

Module III (15 Hours)

Nutrition for Racket Sports and Cyclic sports
Racket sports (Badminton, Tennis, Squash): Game dynamics and fuel utilisation (energy and macronutrients & micronutrients); Body composition; Energy

demands of the game; Nutrient timing and dietary periodisation; Current research on racket sports; Tailored nutrition and Hydration guidelines pre, during and post training/competitions, Supplement or other ergogenic aids commonly used in racket sport;
Recovery strategies; Case studies on racket sports

Nutrition for Endurance Sports (Long distance Swimming, Cycling and Marathon): Characteristics; Physiology; Energy systems; Body Composition; Duration and intensity of event; Nutritional Requirements in Training and Competition; Dietary and Hydration Strategies; Use of Supplements; Case studies on endurance sports.

Module IV (15 hours)

Nutrition for Weight-dependent and balance sports Strength and Combat sport (Wrestling, Weightlifting, Judo, Boxing, Taekwondo and Fencing): Game dynamics; Fuel utilisation (energy and macronutrients); Case studies of Indian players; Energy demands of the game; Nutrient timing and dietary periodisation; Current research on strength & combat sport.
Weight management issues: Overemphasis on protein requirements; Tailored nutrition and hydration guidelines before, during and post-training/competitions; Supplement or other ergogenic aids; Recovery strategies (dietary and non-dietary components).
Balance sports (Gymnastics, Golf): Playing formats and Fuel utilisation (energy and macronutrients);
Different energy demands of balance sport; Physique maintenance and weight management issues; nutrient timing and dietary periodisation; Current research on balance sports; Tailored nutrition and hydration guidelines before, during and post-training/competitions; Supplement or other ergogenic aids commonly used; Recovery strategies

Module V (15 hours)

Nutrition for water sport and coordination sport
Water sports (Rowing, Kayaking): Physiological and Biochemical changes in water sports; Research on water sports in relation to nutrition and dietary habits. Common nutritional problems associated to water sports; Guidelines specific to nutrition in water sports;
Identifying individual energy and other macronutrient requirements; Nutrient

timing; Dietary periodisation; Supplement usage.
Coordination sport (Archery, Shooting): Playing formats and specific demands of the game; Eye-hand coordination; Current research relating nutrition and coordination sports performance; Maintaining proper fuel and hydration in coordination sport; Case studies of archers and shooters; Identifying the current nutritional problems; Dietary guidelines for pre, during and post training/competition, Supplement usage.

References

Maughan, R. J. (Ed.). (2008). Nutrition in sport (Vol. 7). John Wiley & Sons.
Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones & Bartlett Learning.
Eberle, S. G. (2013). Endurance Sports Nutrition, 3E. Human Kinetics.
Ryan, M. (2012). Sports nutrition for endurance athletes. Velo Press.
Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC 6. Press.
Reaburn, P. R. (Ed.). (2014). Nutrition and Performance in Masters Athletes. CRC Press.
Slater, G., & Phillips, S. M. (2011). Nutrition guidelines for strength sports: sprinting,
weightlifting, throwing events, and bodybuilding. Journal of sports sciences, 29(sup1),S67-S77.
Christoph Zinner andBilly Sperlich. (2016). Marathon Running: Physiology, Psychology,Nutrition and Training Aspects

Pedagogical Tools

- Lecture
- Internships
- Role Play
- Group Discussion
- Case studies

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

- Professional Ethics and standards
- Human Values/ Indian Values/ Indian Culture/ Indian Heritage

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships
- Fieldwork
- Organizational Study

Skill Component: Clinical Orthopaedics and Sports Medicine Practicals (SNP5CRP0123)

75 Hours 5 Credits

Course Outcomes

- Understand the physiotherapy techniques and its application for various condition.
- Describe the assessment and management of peripheral nerve injuries and disorders.
- Develop an in-depth knowledge on the application of physiotherapy procedures and use of equipment's.

Practical Exposure on:

1. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of physiotherapy in orthopaedics conditions.
2. Practical demonstration of basic principles of physiotherapy assessment, functional assessment and application of sports physiotherapy
3. Identify Muscle work of various movements in body at different angle.
4. Identify normal and abnormal posture.
5. Normal gait with it parameters and identify abnormal gait with the problems in it.
6. Fundamental positions and derived positions
7. Range of motion (Passive ROM, Active ROM, Assisted resisted ROM) exercises to all joints
8. Measurement of joint range using goniometer
9. General and local Relaxation techniques
10. Suspension exercise to all major joints
11. Manual muscle testing of individual muscles
12. Coordination exercises, balancing exercises
13. Identify basic electrical components in electro therapeutic equipment's
14. Reading of medical records, identifying indications and contraindications for electrotherapy.

15. Stimulation of motor points, stimulation of individual muscle and group muscle
16. Faradic foot bath, wax therapy
17. Placement of electrodes in TENS & IFT with dosimeter for various indications.
18. Joint Mobilization to individual joint
19. Stretching of individual and group muscles
20. Resisted exercises to individual and group muscles, open and closed kinematic exercises
21. PNF patterns to upper and lower limb.
22. Various types breathing exercises, chest mobilization exercises, postural drainage
23. Gait training with various walking aids

Skill Component: OJT- 3 (SNP5OJT0123)

3 Credits

The student will attach himself with a Physiotherapy or Nutrition organization approved by the Department for a period of 2 weeks for Industry Training. The student should actively participate in the operations of the organization and should work like any other employee of that organization. At the end of the On the job Training, the student should prepare a comprehensive report) and present the report with the aid of PPT to the corresponding teachers. Student should also produce a certificate of internship from the organization. All the above details should be submitted to the Department for evaluation.

Detailed Syllabus: Semester VI

General Component: Corporate Readiness Program (SNP6CMT0123)

60 Hours 4 Credits

Course Outcomes

- Create awareness about the professional world.
- Select the strategies for the students to enhance their performance.
- Develop empathy and morals.
- Develop the skill in the student to imbibe the professional values.
- Develop the confidence of students to perform essential skills.

Module I (12 Hours)

Understanding Self: Where We Came from (Brainstorming about self), Whats important to the students, what he is good at, SWOT analysis, Motivation, Personality Traits, Quality Initiatives, Values, Attitudes, Personal Grooming, Body Language, Need of Training in Personality Development

Module II (12 Hours)

Career Assessment: Setting Goals, Career researching and job lead resources, Job Analysis, Values, Writing skills (Business correspondence), Business communication and presentation skills, Presentation Skills.

Module III (12 Hours)

The Work World: How do people really get Jobs: Beliefs about how people get jobs; Job discrimination; What Are Different Jobs Like: Interviews in different job fields; Identifying and Coping With Problems on the Job: Identifying potential problems, Developing solutions; The Management and Organizational Skills: Getting organized, Time Management

Module IV (12 Hours)

Interview and Group Discussion: Importance, Need, advantages and disadvantages, methods, types, Do's and Dont's, Etiquette: Physical and Digital Etiquette

Module V (12 Hours)

Campus to Corporate: Building a Resume, Job Search, Applying For a Job, Identifying the Barriers to Success, My Career Plan, Networking

Pedagogical Tools

- Lecture
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Gender Empowerment
- Professional Ethics and standards

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

General Component: Physiotherapy in General Medicine & Surgery including Cardiothoracic Conditions (SNP6CMT0223)

60 Hours 4 Credits

Course Outcomes

- Practice the differences between the Adult and Paediatric lung, bedside assessment of the patient-Adult & Paediatric and the investigations and tests in cardiology.
- Explain therapeutic techniques to increase lung volume, to decrease the work of breathing and to clear secretions and drugs used in cardiology.
- Explain Physiotherapeutic management in dermatology conditions such as wound ulcers.
- Explain role of Physiotherapy in Obstructive lung conditions, Restrictive lung conditions and Neonatal and Paediatric Physiotherapy.
- Develop skills to perform assessments.

Module I (12 Hours)

Anatomical and physiological differences between the Adult and Paediatric lung.

Bedside assessment of the patient-Adult & Paediatric

Module II (12 Hours)

Investigations and tests - Exercise tolerance Testing - Cardiac & Pulmonary, Radiographs, PFT, ABG ECG, Haematological and Biochemical Tests
Physiotherapy techniques to increase lung volume, controlled mobilization, positioning, breathing exercises, Neurophysiological Facilitation of Respiration, Mechanical aids - incentive Spirometry, CPAP, IPPB

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

Module III (12 Hours)

Physiotherapy techniques to clear secretions-Hydration, Humidification & Nebulisation Mobilisation and Breathing exercises, Postural Drainage, Manual

techniques - Percussion, Vibration and Shaking, Rib Springing, ACBT Autogenic Drainage, Mechanical Aid - PEP, Flutter, IPPB, Facilitation of Cough and Huff Nasopharyngeal Suctioning.

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.

Module IV (12 Hours)

Management of wound ulcers - Care of ulcers and wounds – Care of surgical scars - U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper granulated Scars, Keoloids, Electrotherapeutics measure for relief of pain during mobilization of scars tissues.

Physiotherapy in dermatology - Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; pigmentation; infected wounds, ulcers, Faradic foot bath for Hyperhydrosis, Massage maneuvers for cosmetic purpose of skin; use of specific oil as medium; Care of anaesthetic haird and foot; Evaluation; planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices.

Module V (12 Hours)

Neonatal and Pediatric Physiotherapy - Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.

Physiotherapy in Restrictive lung conditions, Management of breathlessness, Pulmonary Rehabilitation, Physiotherapy following Lung surgeries, Respiratory failure - Oxygen Therapy and Mechanical Ventilation

References

- Tidy's physiotherapy
- Cash's Text Book of Chest, Heart, Vascular Disorders for Physiotherapists
- The Brompton Guide to chest physiotherapy DU Gasket (Completed)
- Physical Rehabilitation Assessment and Treatment - O'Sullivan Schmitz
- Elements in Pediatric Physiotherapy - Pamela M Eckersley

- Essentials of Cardio Pulmonary physical therapy by Hillegass and Sadowsky
- Cardio pulmonary Symptoms in physical Therapy practice by Cohen and Michel
- Chest Physiotherapy in Intensive Care Unit by Mackenzi
- Cash's Text book of General Medicine and Surgical conditions for Physiotherapists
- Physiotherapy in Psychiatry
- Physical Therapy for the Cancer patient by M.C Garvey
- Physiotherapy in Obstetrics and Gynecology by Polden

Pedagogical Tools

- Lecture
- Field Work
- Internships
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards
- Human Values/ Indian Values/ Indian Culture/ Indian Heritage

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships

General Component: Public Nutrition (SNP6CMT0323)

60 Hours 4 Credits

Course Outcomes

- Explain about the nutritional problems and their management.
- Develop knowledge about the scope of public nutrition.
- Explain about various nutritional programmes.
- Identify the nutritional status of a person.
- Discuss about the methods of nutritional education.

Module I (12 Hours)

Concept and scope of public nutrition

Introduction to public nutrition & health, Concept and scope & limits, Health care system

Definition and multidisciplinary nature of public nutrition, Relationship between health and nutrition. Role of public nutritionists in the Health Care Delivery,

Module II (12 Hours)

Population Dynamics, Demographic transition, Demographic processes, Demographic cycle

& concepts, Population structure, Fertility behaviour, Population policy.

National Nutrition Policy

Module III (12 Hours)

Nutritional problems, their implications and related nutrition programmes

Etiology, prevalence, clinical features and preventive strategies of-

Under nutrition – Protein Energy Malnutrition, Nutritional Anaemia, Vitamin A Deficiency, Iodine Deficiency Disorders

Over Nutrition – Obesity, Coronary Heart Disease, Diabetes Mellitus.

Other Health conditions - Diarrhoea and Vomiting, Communicable diseases like Covid 19, Cholera, Malaria, Tuberculosis, AIDS

National Nutrition Policy and Programmes - Integrated Child Development Services

(ICDS) Scheme, Mid-day Meal Programme (MDMP), National programmes for prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders.

Module IV (12 Hours)

Assessment of Nutritional Status

Objectives and importance

Methods of assessment

Direct – Clinical signs, nutritional anthropometry, biochemical tests, biophysical tests

Indirect – Diet surveys, vital statistics

Module V (12 Hours)

Nutrition Education : Objectives, principles and scope of nutrition and health education and promotion, steps in planning, conducting & evaluating nutrition education programme, Behaviour Change Communication

Objectives and role of organizations and important agencies:

National Health Policy, National Health Mission, ICDS and National Organizations related to health ICMR, ICAR, CSIR, CFTRI.

International Organizations related to health - WHO, UNICEF, FAO, ILO, Indian Red Cross Society, UNFPA Word Bank, Asia Development Bank, Ford Foundation, CARE, Rockefeller Foundation.

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Pedagogical Tools

- Lecture
- Field Work
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit

Skill Component: Clinical Sports Nutrition (SNP6CRT0123)

90 Hours 6 Credits

Course Outcomes

- Learn the health related disorders among sports person.
- Understand the nutritional approach to manage the health disorders in sports person.
- Explain about the role of nutrition to overcome sports injuries.
- Develop nutritional strategies to overcome the barriers of altitude , heat and cold training.

Module I (18 Hours)

Athletes with Nutrition related disorders

Diabetes : Definition and description of diabetes mellitus; Physiological effect of exercise; Problems of athletes with type 1 diabetes and cardiovascular diseases; Physical activity prescription for athletes with type 1 diabetes and cardiovascular disease; high risk sport, insulin abuse and sport; Effects of long-term physical activity or exercise training on Insulin sensitivity; Acute effects of exercise in athletes with Type 1 diabetes and cardiovascular disease;

Exercise in the presence of Hyperinsulinemia and Hypoinsulinemia;

Medical nutrition therapy (MNT) for athletes with type-1 diabetes and cardiovascular disease; Dietary guidelines and Nutrient timing; type of carbohydrate and timing; Pre and post event carbohydrate loading and fluids; Insulin adjustments for athletes with type-1 diabetes; Special problems for athlete with Type-1 diabetes and cardiovascular disease; Complications with poorly controlled

diabetes.

Module II (18 hours)

Osteoporosis: Definition and description; Causes and consequences; Physiological effects of exercise;

Pathophysiology; Medical Nutrition Therapy.

Sports Anaemia: Definition and description; Causes and consequences; Physiological effects of exercise;

Pathophysiology; Medical Nutrition Therapy.

Female athletes: Vulnerability to nutrition assault and insufficiency; Differences in fuel or nutrient utilization among female athletes; Female athletic triad (FAT) including eating disorder, menstrual irregularity and poor bone mineral density; energy availability-definition and its association with FAT;
Assessment for FAT; Dietary guidelines and suggestions for FAT.
Vegetarian athletes: Classification; Nutritional status and dietary considerations; Nutritional gaps currently identified and suitable dietary modification for fueling during training, competitions and traveling.

Module III (18 hours)

Athletes with gastrointestinal disorders, food allergies and food intolerance: GI disturbance occur in some athletes before, during and after competition and training; Excessive flatulence; Abdominal distention; Intermittent diarrhoea; Constipation; Food related adverse reactions (FRAR); Physiological and dietary factors affecting gastric emptying and gut comfort; Gut trainability; Lower GI tract conditions; Irritable
Bowel Syndrome (IBS); Low FODMAP diet for IBS; Composition, food sources of FODMAP and pattern of consumption; Coeliac disease (Diagnosis and treatment); Inflammatory bowel disease (IBD)-Diagnosis, Nutrition related concerns for athletes with untreated IBD;
Medical Nutrition Therapy.
Food-Related adverse reactions (FRAR): FRAR includes Food allergy and Food intolerance; Diagnosis and Medical Nutrition Therapy; Recommendations for effective nutrition intervention for athletes with FRAR.

Module IV (18 Hours)

Nutrition for Special groups and Sports injuries
The Paralympic Athlete: Athletes with physical or intellectual impairments (Classification and associated risk for injury or health outcomes); Body composition assessment and management; Eating difficulties and Paralympic athletes and nutritional demands: Dietary intakes and potential issues; Reported dietary intakes; Fibre timing of food intake and bowel control; Fluid intake; Use of vitamin, mineral or sports supplement; Travelling with Paralympic Athletes.
Sport Injury and Rehabilitation: Type of injury and rehabilitation required, Physiological and metabolic changes during injury and rehabilitation; Eating habits commonly followed during an injury; Overweight among injured athletes; Role of nutrition and dietary guidelines in recovery from an injury;

Common injuries among athletes - Maxillofacial fractures, Knee injury, ACL tear, Patellofemoral syndrome, Tennis elbow, Ankle sprain, Groin pull, Hamstring sprain.

Module V (18 Hours)

Altitude, Cold and Heat- Altitude training and Physiology: Physiological changes and metabolic adaptation for high altitude training; Dietary recommendations at varied altitudes; Common Nutritional problems faced by athletes at high altitude. Cold and Heat: Effect of Cold environment on dietary habits and recommendations for training and competing in cold environments; Special emphasis on hydration strategies; Effects of exercising in the heat;

Heat stress and injury; Athlete performance and weight change while exercising in the heat; Strategic timing of water and electrolyte consumption during extreme climatic conditions.

Medical and Nutritional Issues for the Travelling Athlete: Nutritional problems often faced by the travelling athletes; Monitoring and Documentation of climate, time zones, altitude, food safety and availability by the support staff or nutritionist; Market surveys and research support for the journey (travel, accommodation, catering, training and event schedules); Noting vaccination and existing allergies; Hydration and supplements for travel within country and overseas; Tips for preventing jet lag and adaptation to different time zone; Guidelines for preventing food borne diseases; Strategies for Treating Diarrhoea and Vomiting; Replacing fluid and electrolytes; Strategies to note for meeting dietary guidelines while traveling and follow up strategies.

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8. Cheung, S. (2010). Advanced environmental exercise physiology. Human Kinetics

Pedagogical Tools

- Lecture
- Field Work
- Internships
- Role Play
- Group Discussion

Expected Skills, Proficiencies and Values

- Entrepreneurship
- Employability enhancement
- Professional Ethics and standards
- Human Values/ Indian Values/ Indian Culture/ Indian Heritage

Internal Evaluation Methods

- Attendance
- Written Exam
- Assignments
- Seminar
- Credit for Merit
- Internships

Skill Component: Sports Nutrition and Public Nutrition Practicals (SNP6CRP0123)

90 Hours 6 Credits

Course outcome:

- Learn the planning of diets for sports person based on their energy needs.
- Develop knowledge on the composition of various nutritional supplements available in market.
- Analyze the nutritional problems prevailing in the community
- Develop assessment and counselling strategies to tackle nutritional problems of the community.

I Menu planning and fluid intake during training and competition including nutrient periodisation and preparing the diets for,

1. Football players/Hockey players/Cricketers.
2. Sprinters.
3. Marathon runners.
4. Badminton players.
5. Rowing.
8. Power sports including weight-management.

II Planning and preparing diets for,

1. An athlete with diabetes.
2. An athlete with sports anaemia.
4. An athlete with sports injury.
5. A Paralympic athlete.
6. Vegetarian athletes.

III Dietary supplements & Ergogenic Aids

1. Development and standardization of a sports bars or meal replacement bars.
2. Composition and brand names of supplements that improve Muscle mass commonly available in the market
3. Composition and brand names of carbohydrate supplements commonly available in the market.
4. Composition and brand names of supplements micro nutrients commonly available in the market.

IV Public Nutrition Practicals

1. Planning and preparation of low cost nutritious recipes for infants, preschoolers, pregnant/nursing mothers for nutritional education.
2. Assessment of nutritional status:

- Anthropometry – Weight and Height measurements, WHR, Skinfold Thickness
- Plotting and interpretation of growth charts for children below 5 years
- Identification of clinical signs of common nutritional disorders
- Dietary assessment – FFQ and 24 hour diet recall
- Development of questionnaire to assess the nutritional problems of vulnerable groups.

3. Planning and conducting community nutrition camp for the community.

Skill Component: Internship with Project (SNP6CPR0123)

6 Credits

The student will attach himself with a Physiotherapy, Nutrition or Fitness organization approved by the Department for a period of 4 weeks for Industry Training. The student should actively participate in the operations of the organization and should work like any other employee of that organization. At the end of the On the job Training, the student should prepare a comprehensive report and present the report with the aid of PPT to the corresponding teachers. Student should also produce a certificate of internship from the organization. All the above details should be submitted to the Department for evaluation. The student should undertake a project based on any subject related to their study and should submit the compiled project report for the viva-voce.

Adopted the M.G University regulations 2018 for B .Voc courses by incorporating necessary corrections to align with the requirement of B. Voc. Programme of St Albert's College, (Autonomous), Ernakulam.

Gist of changes in Syllabus

Corrected the arrangement of papers in different semester

Two overlapping papers are compiled into single paper
Two papers which are found irrelevant has been replaced with two relevant papers
Three practical papers are added.

Corrected the no. of modules for all papers to five without affecting the content.

Semester	Changes applied in 2023 syllabus
Semester I	1) Removed SNP1CMT0220 General Psychology and added SNP1CMT0223 Food Science (new paper)
Semester II	1) Shifted SNP2CRT0120 Sports and Exercise therapy to 3rd semester and replaced with SNP2CRT0123 Yoga and Basic Life Support (clubbing Alternate Medicine and First aid and Nursing)
Semester III	1) Clubbed the content of SNP3CMT0320 Scientific principles and practices of health and fitness training into SNP3CRT0323 Physiology of Sports and Exercise paper in the same semester 2) Shifted SNP4CRT0220 Family Meal Management from fourth semester to third semester
Semester IV	1) Removed SNP4CMT0220 Abnormal Psychology and shifted SNP6CMT0320 Sports Nutrition Paper from VIth semester to IVth with the name SNP4CMT0223 Nutrition for Sports and Exercise 2) Shifted SNP5CRT0220 Therapeutic Nutrition from fifth semester to fourth semester 3) Added SNP4CRP0123 Normal Nutrition and Therapeutic Nutrition Practical
Semester V	1) SNP4CMT0120 Research Methodology of fourth semester shifted to fifth semester

	2) SNP5CRT0120 Medical Instrumentation and Hospital Visit replaced by new paper SNP5CRT0123 Sports Specific Nutrition 3) Introduced SNP5CRP0123 Clinical Orthopaedics and Sports Medicine Practical's
Semester V I	1) Added new paper SNP6CMT0323 Clinical Sports Nutrition 2) Added SNP6CRP0123 Sports Nutrition and Public Nutrition Practical's

The changes made are presented and approved by the BOS held on 1st March 2023.

FOR TRUTH AND SERVICE