DAVANGERE UNIVERSITY

DIRECTORATE OF SPORTS

Proceedings of Board of Studies Meeting (B.P.Ed & M.P.Ed) in Physical Education held on 09th March 2020 in the Office of Director of Sports, at Shivagangothri, Davangere University, Davangere.

MEMBER PRESENT:

01	**Dr. Rajkumar P Malipatil** DOS in Physical Education and Sports Sciences, A.W. University, Vijayapura.	Chairman
02	**Dr. Gajanana Prabhu B** Asst. Professor. DOS in Physical Education and Sports Sciences, Kuvempu University, Shankhaghatta.	Member
03	**Dr. M.S. Rajakumar** Director of Sports. DOS in Physical Education and Sports Sciences, Davangere University, Davangere	Member & Convener
04	**Sri. Venkatesh T** Principal Centenary College of Physical Education. Malladihalli. Davangere University, Davangere	Member

MEMBERS NOT PRESENT

01	**Mr. C.G. Poojar** T.M.A.E.S College of Physical Education, Haveri Karnataka University, Dharawada	Member
02	**Sri. V. Shivashankar** Teaching Assistant D.U.C.P.E. Davangere University, Davangere	Member
03	**Mr. G.S. Nagaraj.** Deputy Director. DOS in Physical Education and Sports Sciences, Kuvempu. University, Shankhaghatta.	Member

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Shivagangotri, Davangere.

Dr Gajanana Prabhu B

Dr Rajkumar P Malipatil

(T. Venkatesh)

AGENDAS AND DICISIONS

1. Revision of M.P.Ed regulations.
2. Any other subject with the permission of the Chairman.

PROCEEDINGS

The Chairman welcomed all the B.O.S members and briefed about the Agenda to be discussed.

The following decisions were taken by the Board of Studies, unanimously.

Agenda.1: Revision of M.P.Ed regulations

Decision: The M.P.Ed. regulation was thoroughly reviewed and necessary modifications were made in accordance with Davangere University regulations.
Annexure –I (copy of revised regulations)

The meeting was concluded with vote of thanks by the Chairman.

Dr. Rajkumar P Malipatil
Chairman,
BOS in Physical Education (UG)
Davangere University, Davangere

DAVANAGERE UNIVERSITY, DAVANAGERE

Department of Studies in Physical Education and Sports Sciences

TWO YEARS M.P.Ed. COURSE CBCS SEMESTER SCHEME REGULATIONS (REVISED ON 09-03-2020)

Preamble:

Davanagere University, Davanagere, started the PG course in Physical Education from the academic year 2019-2020. A Meeting of BOS was held on 09th of March 2020 at the office of Director of Sports, Davanagere University, to revise the existing regulations and syllabus of MPED course.

Teacher Education in the country is controlled by many agencies. National Council for Teacher Education (NCTE) is one such statutory body of Govt. of India which recommends the norms and standards for teacher Education Institutions. As per UGC Guidelines Davanagere University, Davanagere has made mandatory the **Choice Based Credit System Semester Scheme** (CBCS Scheme) to all the PG courses. The Syllabus and regulation has been drafted under CBCS Semester Scheme within the framework of NCTE as follows.

M.P.Ed. CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME-2019-20

1. These regulations shall be called "regulations Governing Master of Physical Education (M.P.Ed.) Degree programme under CBCS Semester Scheme" 2020.
2. The M.P.Ed., Degree programme shall be offered under the faculty of Education.
3. The course shall be residential one.
4. **Duration of Course:** 4 Semesters / Two years: Each semester shall extend over a period of sixteen weeks excluding examination days. Maximum duration of the programme shall be four years from the date of admission.
5. **Eligibility for Admission:**

a. Minimum Requirement for Admission: Pass in Bachelor of Physical Education (B.P.Ed.,) Degree programme of Davangere University or of any other University considered as equivalent there to, securing at least 50 percent (45% for SC/St & Cat-I) of marks.

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b. All candidates shall produce a medical fitness certificate issued by a competent medical officer.

6. **SELECTION PROCEDURE** is as shown in Annexure -1

7. **Working Hours :** In each working day there shall be four hours of Practical and three hours of theory:

Semester	Theory	Practical & Dissertation	Total
I	3 Hrs	4 Hrs	7 Hrs
II	3 Hrs	4 Hrs	7 Hrs
III	3 Hrs	4 Hrs	7 Hrs
IV	3 Hrs	4 Hrs	7 Hrs

8. There shall be Theory core course, Elective course as well as practical course in each semester. There shall be one additional open elective in III semester offered by various other Departments of Davangere University, Shivagangotri campus

9. **Medium of Instruction:** Medium of instruction shall be in English. However, the candidates are permitted to write the examination in English or Kannada.

10. **Internal Assessment:**

Internal assessment marks shall be awarded on the basis of the following criteria:

a) **Theory:** Break up of **30** Internal Assessment marks of theory papers shall be as follows:

i. Attendance ..... 10 Marks
ii. Assignment (one).....05 Marks
iii. Test (Two) .....10 Marks
iv. One Seminar .....05 Marks

b) **Practical**: Internal Assessment will be done on the basis of their overall attendance, practical performance, involvement in practical related activities, record book and viva voce.

c) **Specialization:** Internal Assessment marks of specialization are awarded on the basis of Regularity, imitative in learning, knowledge of rules, officiating and coaching, demonstration of skills and movements.

d) **Dissertation:** A candidate shall choose area of research of his/her choice in consultation with the guide and submit the dissertation. He/ She should submit the desertion to the Office, within stipulated time during fourth semester. There shall be an internal Viva-voce for twenty five marks for each candidate to be conducted by the departmental

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council with one external subject expert from Board of Examiners of current academic year.

e) **Pedagogy:** A candidate shall select a topic for lessons in class room and practical based on the M.P.Ed. Syllabus and take stipulated number of classes as per NCTE regulations.

11. Attendance: Each semester will be taken as a unit for the purpose of calculating attendance and the student will have to put in the required attendance for the semester. The candidate has to attain not less than 75 % of attendance of number of working periods (Lectures, seminars, specialization periods taken together) during each semester.

11.1 A candidate who does not fulfill the requirement of attendance shall not be eligible to take examination of the concerned semester.

11.2 A candidate who fails to satisfy the requirement of the attendance in a semester shall rejoin the same semester in the immediate next academic year.

12. Appearance for the Examination:

Candidates on satisfactorily completes a semester shall apply for examination in all the courses of study papers prescribed for that semester.

13. Scheme of Examination:

There shall be a university examination at the end of each semester. The scheme of examination shall be as follows:

a) Theory: Each paper shall be valued by examiners as per Davangere University common regulations pertaining to evaluation.

b) Question Paper pattern should be as per Annexure - III.

c) Specialization: Evaluation in specialization shall be done by two examiners, one internal and one external as per the following scheme. The average of the two shall be credited.

i) Demonstration of skills/techniques/Movements	20 Marks
ii) Coaching ability	20 Marks
iii) Specialization Record	15 Marks
iv) Viva-Voce	15 Marks
Total	**70 Marks**

d) Dissertation: Evaluation of dissertation shall be done for 70 marks by two examiners, one internal and one external. Average marks of the two shall be credited.

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e) **Pedagogy**: The ability of the candidate to take up classes during practical as well as class room will be assessed for 70 marks by two examiners, one internal and one external. Average marks of the two shall be credited.

Note: Whenever assessment is made for two games / activity the 50% of the above Marks shall be divided for the evaluation of the each game / activity.

Practicum/ game specialization/ game coaching/ internship/ Classroom teaching will be the internal evaluation, the Evaluation is purely based on the attendance, ability of the teacher, and competency in handling the classes (Classroom and Field Coaching, Training).

14. Classification of Successful candidates:

The results of successful candidates at the end of each semester shall be declared on the basis of Percentage of Aggregate Marks and in terms of Grade Point Average (GPA) and alpha sign grade. The result at the end of the fourth semester shall also be classified on the basis of Percentage of Aggregate Marks and on the basis of the Cumulative Grade Point Average (CGPA) obtained in all the four semesters and the corresponding overall alpha sig grade. An eight pint grading system, alpha sign grade as described below shall be adopted.

First class with Distinction	70% and above (A+,A++ or O)
First Class	60% and above but less than 70% (A)
High Second Class	55% and above but less than 60% (B+)
Second Class	50% and above but less than 55% (B)
Pass Class	40% and above but less than 50% (C)

Eight Point Alpha – Sign Grading Scale:

Grade Point Average	< 4	4 - < 5	5 - < 5.5	5.5 - < 6	6 - < 7	7 - < 8	8 - < 9	9 - 10
Alpha-Sign Grade	D	C	B	B+	A	A+	A++	O

Note:- The Calculation of the Grade Point Average (GPA) in a Semester and the Cumulative Grade Point Average (CGPA) at the end of fourth semester shall be as per the University common guidelines. And for the rest of and other details regarding results will be as per the university regulations.

15. Provision for Repeaters:

A candidate is allowed to carry all the previous un-cleared paper and specialization activity to the subsequent semester's Such of the those candidates who have failed/remained absent/opt to improve marks in any one or more papers in theory/specialization/dissertation, hence forth called repeaters, shall appear/improve in such paper or papers/specialization/dissertation during the two immediate successive examinations. The repeaters shall take the examinations as per the

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syllabus and the scheme of examination in force during the subsequent appearances. A repeater will not be eligible for the award of rank.

16. Improvement of Results:

A candidate is allowed to apply for improvement in any theory paper/ specialization/dissertation of a particular semester within 30 days from the date of announcement of results of that semester. A candidate who seeks improvement shall surrender the marks card/provisional pass certificate of that semester. However, the marks secured in the previous attempt shall retain if the same is higher. There is no provision for improvement in internal assessment marks. Repeaters shall not be eligible for the award of rank. This provision can be in accordance with the existing university norms from time to time.

17. NCTE norms and Standards:

Norms and standards for recognition of Teacher Education programme issued by National Council for Teacher Education (NCTE) from time to time shall be adopted.

18. Grievance Redressal committee:

The college/ Department shall form a Grievance Redressal Committee for each course in each college/department with the course teacher / Principal/HOD of the faculty as the members. This committee shall solve all the grievances of the students.

19. Miscellaneous:

These revised regulations will apply to the candidates admitted for the academic year 2019-20 and onwards. Declaration of rank, gracing make up courses, etc., are as per the existing regulations in the university (replace year by semester).Any other issue, not envisaged above, shall be resolved by the Vice Chancellor in consultation with the appropriate bodies of the university, which shall be final and binding

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Annexure-I

SELECTION PROCEDURE

Candidates shall be selected on the basis of merit. Merit shall be determined on the basis of candidate's performance in the qualifying examination, physical fitness test and knowledge test as per existing B.P.Ed syllabus.

The weightage shall be given as follows:

i) 40% marks obtained in the qualifying examination
ii) 40% of marks obtained in the knowledge test.
iii) 20% Marks for physical fitness tests performance.

Details of Physical Fitness Tests

1. 100 meters Run ..... Max. 5 marks
2. Long Jump ..... Max. 5 marks
3. Pull ups/ flexed arm hang..... Max. 5 marks
4. 800 mts/ 400 meters Run ..... Max. 5 marks

Details of Entrance Test:

There shall be knowledge test for 40 Marks based on all the cognitive subjects of B.P.Ed., degree programme of Davangere University. Knowledge regarding current affairs in sports will also include in the knowledge test. The departmental council will set the paper for entrance test and evaluate.

Merit list will be announced as per above procedure. Seats will be allotted as per university guidelines. The reservation of seats will be as per existing State Government Policy.

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Annexure – II

CHOICE BASED CREDIT SYSTEM M.P.Ed.,
SEMESTER SCHEME OF EXAMINATION - -2019-20

I SEMESTER

Paper Code	Instruction hrs/week	Duration of Exam (Hrs)	IA	Theory/ Practical	Total Marks	Credits
MPCC 101	3 hrs	3 hrs	30	70	100	3
MPCC 102	3 hrs	3 hrs	30	70	100	3
MPCC 103	3 hrs	3 hrs	30	70	100	3
MPEC 101 or MPEC 102	3 hrs	3 hrs	30	70	100	3
MPPC101	4 hrs	3 hrs	30	70	100	4
MPPC 102	4 hrs	3 hrs	30	70	100	4
MPPC 103	4 hrs	3 hrs	30	70	100	4
MPPC 104	4 hrs	3 hrs	30	70	100	4
Grand Total	**28 hrs**	**24hrs**	**240**	**560**	**800**	**28**

Note:- Total number of hours required to earn 3 credits for each theory course is 51 to 60 hrs per Semester whereas 102 to 120 hrs for each practicum course (including seminars, internal assessments etc).

II SEMESTER

Paper Code	Instruction hrs/week	Duration of Exam (Hrs)	IA	Theory/ Practical	Total Marks	Credits
MPCC 201	3 hrs	3 hrs	30	70	100	3
MPCC 202	3 hrs	3 hrs	30	70	100	3
MPCC 203	3 hrs	3 hrs	30	70	100	3
MPEC 201 or MPEC 202	3 hrs	3 hrs	30	70	100	3
MPPC 201	4 hrs	3 hrs	30	70	100	4
MPPC 202	4 hrs	3 hrs	30	70	100	4
MPPC 203	4 hrs	3 hrs	30	70	100	4
MPPC 204	4 hrs	3 hrs	30	70	100	4
Grand Total	**28 hrs**	**24hrs**	**240**	**560**	**800**	**28**

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Note:- Total number of hours required to earn 3 credits for each theory course 51 to 60 hrs per Semester whereas 102 to 120 hrs for each practicum course (including seminars, internal assessments etc).

III SEMESTER

Paper Code	Instruction hrs/week	Duration of Exam (Hrs)	IA	Theory/ Practical	Total Marks	Credits
MPCC 301	3 hrs	3 hrs	30	70	100	3
MPCC 302	3 hrs	3 hrs	30	70	100	3
MPCC 303	3 hrs	3 hrs	30	70	100	3
MPEC 301 or MPEC 302	3 hrs	3 hrs	30	70	100	3
MPOEC302	2hrs	1 ½ hrs	10	40	50	2
MPPC 301	4 hrs	3 hrs	30	70	100	4
MPPC 302	4 hrs	3 hrs	30	70	100	4
MPPC 303	4 hrs	3 hrs	30	70	100	4
MPPC 304	4 hrs	3 hrs	30	70	100	4
Grand Total	**30 hrs**	**25 ½ hrs**	**210**	**640**	**850**	**30**

Note:- Total number of hours required to earn 3 credits for each theory course 51 to 60 hrs per Semester whereas 102 to 120 hrs for each practicum course (including seminars, internal assessments etc).

IV SEMESTER

Paper Code	Instruction hrs/week	Duration of Exam (Hrs)	IA	Theory/ Practical	Total Marks	Credits
MPCC 401	3 hrs	3 hrs	30	70	100	3
MPCC 402	3 hrs	3 hrs	30	70	100	3
MPCC 403	3 hrs	3 hrs	30	70	100	3
MPEC 401 or MPEC 402	3 hrs	3 hrs	30	70	100	3
MPPC 401	4 hrs	3 hrs	30	70	100	4
MPPC 402	4 hrs	3 hrs	30	70	100	4
MPPC 403	4 hrs	3 hrs	30	70	100	4
MPPC 404	4 hrs	3 hrs	30	70	100	4
Grand Total	**28 hrs**	**24hrs**	**240**	**560**	**800**	**28**

Note:- Total number of hours required to earn 3 credits for each theory course 51 to 60 hrs per Semester whereas 102 to 120 hrs for each practicum course (including seminars, internal assessments etc).

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Annexure - III

QUESTION PAPER PATTERN FOR MPED DEGREE EXAMINATION

Time: 3 hours **Max. Marks: 70**

Part – A: Answer any TEN questions from the following not exceeding four lines (02 marks X 10=20)

1. a
   b
   c
   d
   e
   f
   g
   h
   i
   j
   k
   l

Part - B: Answer any THREE questions from the following not exceeding one page (05 marks X 02=10)

2.
3.
4.
5.

Part - C: Answer any FOUR questions from the following not exceeding Four pages (10 marks X 04=40)

6.
7.
8.
9.
10.
11.

FIRST SEMESTER

PART A – Theory Core Course							
Paper Code	**Title of paper**	**Total Hrs/Week**	**Credit**	**Internal Marks**	**External Marks**	**Total**	**Duration of examination (hrs)**
MPCC-101	Research process in Physical Education and Sports Sciences	3 hrs	3	30	70	100	3 hrs
MPCC-102	Physiology of Exercise	3 hrs	3	30	70	100	3 hrs
MPCC-103	Yogic Sciences	3 hrs	3	30	70	100	3 hrs
Theory Elective Course (Any one)							
MPEC-101	Test, Measurement and Evaluation in physical education	3 hrs	3	30	70	100	3 hrs
MPEC-102	Sports Technology						
PART B – Practical Course							
MPPC-101	Track events+ Gymnastics/ Swimming/Badminton (any one)	4 hrs	4	30	70	100	3 hrs
MPPC-102	Laboratory Practical- Sport Psychology, Physiology of Exercise, Biomechanics & Kinesiology (Two practical for each subject)	4 hrs	4	30	70	100	3 hrs
MPPC-103	Yogic practices + Aerobics, Self defense- Martial arts, Taekwondo, Shooting, Archery (Any one)	4 hrs	4	30	70	100	3 hrs
MPPC-104	Mass Demonstration/ Adventure activities (Any one)	4 hrs	4	30	70	100	3 hrs
	TOTAL	**28 hrs**	**28**	**240**	**560**	**800**	**24hrs**

SECOND SEMESTER

PART A – Theory Core Course							
Paper Code	**Title of paper**	**Total Hrs/Week**	**Credit**	**Internal Marks**	**External Marks**	**Total**	**Duration of examination (hrs)**
MPCC-201	Applied Statistics in Physical Education & Sports	3 hrs	3	30	70	100	3 hrs
MPCC-202	Sports Biomechanics & Kinesiology	3 hrs	3	30	70	100	3 hrs
MPCC-203	Athletic Care and Rehabilitation	3 hrs	3	30	70	100	3 hrs
Theory Elective Course (Any one)							
MPEC-201	Sports Journalism and Mass Media	3 hrs	3	30	70	100	3 hrs
MPEC-202	Sports Management & Curriculum designs in Physical Education						
PART B – Practical Course							
MPPC-201	Jumping events+ Gymnastics/ Swimming/Kho-Kho (any one)	4 hrs	4	30	70	100	3 hrs
MPPC-202	Games Specialization- Kabaddi, Table Tennis, Tennis, Squash, Baseball, Volleyball and Netball (any Two)	4 hrs	4	30	70	100	3 hrs
MPPC-203	Teaching lessons of Indigenous activities & Sports- 5 lessons (4 Internal & 1 External)	4 hrs	4	30	70	100	3 hrs
MPPC-204	Class room teaching lessons on theory of different sports & Games- 5 lessons (4 Internal & 1 External)	4 hrs	4	30	70	100	3 hrs
	TOTAL	**28 hrs**	**28**	**240**	**560**	**800**	**24hrs**

THIRD SEMESTER

PART A – Theory Core Course							
Paper Code	**Title of paper**	**Total Hrs/Week**	**Credit**	**Internal Marks**	**External Marks**	**Total**	**Duration of examination (hrs)**
MPCC-301	Scientific principles of sports training	3 hrs	3	30	70	100	3 hrs
MPCC-302	Sports Medicine	3 hrs	3	30	70	100	3 hrs
MPCC-303	Health Education and Sports Nutrition	3 hrs	3	30	70	100	3 hrs
Theory Elective Course (Any one)							
MPEC-301	Sports Engineering	3 hrs	3	30	70	100	3 hrs
MPEC-302	Physical Fitness & Wellness						
MPOEC-301	Health, Fitness &Wellness	2hrs	2	10	40	50	1 ½ hrs
PART B – Practical Course							
MPPC-301	Throwing events+ Gymnastics/ Swimming/Football (any one)	4 hrs	4	30	70	100	3 hrs
MPPC-302	Games Specialization- Softball, Cricket, Hockey and Basketball (any Two)	4 hrs	4	30	70	100	3 hrs
MPPC-303	Coaching lessons of Track & Field- 5 lessons (4 Internal & 1 External)	4 hrs	4	30	70	100	3 hrs
MPPC-304	Coaching lessons of Game Specialization - 5 lessons (4 Internal & 1 External)	4 hrs	4	30	70	100	3 hrs
	TOTAL	**30 hrs**	**30**	**250**	**600**	**850**	**25 ½ hrs**

FOURTH SEMESTER

PART A – Theory Core Course							
Paper Code	**Title of paper**	**Total Hrs/Week**	**Credit**	**Internal Marks**	**External Marks**	**Total**	**Duration of examination (hrs)**
MPCC-401	Information & Communication Technology in Physical Education	3 hrs	3	30	70	100	3 hrs
MPCC-402	Sports Psychology	3 hrs	3	30	70	100	3 hrs
MPCC-403	Dissertation	3 hrs	3	30	70	100	3 hrs
Theory Elective Course (Any one)							
MPEC-401	Value & Environmental Education	3 hrs	3	30	70	100	3 hrs
MPEC-402	Education Technology in Physical Education						
PART B – Practical Course							
MPPC-401	Track &Field: Combined Events & Others+ Gymnastics/ Swimming/Handball (any one)	4 hrs	4	30	70	100	3 hrs
MPPC-402	Games Specialization- Boxing, Fencing, Judo, Karate, Wrestling, Wushu (Any Two)	4 hrs	4	30	70	100	3 hrs
MPPC-403	Officiating lessons of Track & Field- 5 lessons (4 Internal & 1 External)	4 hrs	4	30	70	100	3 hrs
MPPC-404	Officiating lessons of Game Specialization - 5 lessons (4 Internal & 1 External)	4 hrs	4	30	70	100	3 hrs
	TOTAL	**28 hrs**	**28**	**240**	**560**	**800**	**24hrs**

Semester 1

Theory Courses

MPCC-101 RESEARCH PROCESS IN PHYSICAL EDUCATION AND SPORTS SCIENCES

UNIT I – Introduction

Meaning and Definition of Research – Need, Nature and Scope of research in Physical Education. Classification of Research, Location of Research Problem, Criteria for selection of a problem, Qualities of a good researcher.

UNIT II – Methods of Research

Descriptive Methods of Research; Survey Study, Case study, Introduction of Historical Research, Steps in Historical Research, Sources of Historical Research: Primary Data and Secondary Data, Historical Criticism: Internal Criticism and External Criticism.

UNIT III – Experimental Research

Experimental Research – Meaning, Nature and Importance, Meaning of Variable, Types of Variables. Experimental Design - Single Group Design, Reverse Group Design, Repeated Measure Design, Static Group Comparison Design, Equated Group Design, Factorial Design.

UNIT IV – Sampling

Meaning and Definition of Sample and Population. Types of Sampling; Probability Methods; Systematic Sampling, Cluster sampling, Stratified Sampling. Area Sampling – Multistage Sampling. Non- Probability Methods; Convenience Sample, Judgement Sampling, Quota Sampling.

UNIT V – Research Proposal and Report

Chapterization of Thesis / Dissertation, Front Materials, Body of Thesis – Back materials. Method of Writing Research proposal, Thesis / Dissertation; Method of writing abstract and full paper for presenting in a conference and to publish in journals ,Mechanics of writing Research Report, Footnote and Bibliography writing.

REFERENCE:

- Best J. W (1971) Research in Education, New Jersey; Prentice Hall, Inc.
- Clarke David. H & Clarke H, Harrison (1984) Research processes in Physical Education, New Jersey; Prentice Hall Inc.
- Craig Williams and Chris Wrgg (2006) Data Analysis and Research for Sport and Exercise Science, Londonl Routledge Press.
- erry R Thomas & Jack K Nelson (2000) Research Methods in Physical Activities; Illonosis; Human Kinetics.
- Kamlesh, M.L. (1999) Reserach Methodology in Physical Education and Sports, New Delhi.
- Moses, A. K. (1995) Thesis Writing Format, Chennai; Poompugar, Pathippagam.
- Rothstain, A (1985) Research Design and Statistics for Physical Education, Englewood Cliffs: Prentice Hall, Inc.
- Subramanian, R, Thirumalai Kumar S & Arumugam C (2010) Research Methods in Health, Physical Education and Sports, New Delhi; Friends Publication.

Semester I

Theory Courses

MPCC-102 PHYSIOLOGY OF EXERCISE

UNIT I – Skeletal Muscles and Exercise

Macro & Micro Structure of the Skeletal Muscle, Chemical Composition. Sliding Filament theory of Muscular Contraction. Types of Muscle fibre. Muscle Tone, Chemistry of Muscular Contraction – Heat Production in the Muscle, Effect of exercises and training on the muscular system.

UNIT II – Cardiovascular System and Exercise

Heart Valves and Direction of the Blood Flow – Conduction System of the Heart – Blood Supply to the Heart – Cardiac Cycle – Stroke Volume – Cardiac Output – Heart Rate – Factors Affecting Heart Rate – Cardiac Hypertrophy – Effect of exercises and training on the Cardio vascular system.

UNIT III – Respiratory System and Exercise

Mechanics of Breathing – Respiratory Muscles, Minute Ventilation – Ventilation at Rest and During Exercise. Diffusion of Gases – Exchange of Gases in the Lungs –Exchange of Gases in the Tissues – Control of Ventilation – Ventilation and the Anaerobic Threshold. Oxygen Debt – Lung Volumes and Capacities – Effect of exercises and training on the respiratory system.

UNIT IV – Metabolism and Energy Transfer

Metabolism – ATP – PC or Phosphagen System – Anaerobic Metabolism – Aerobic Metabolism – Aerobic and Anaerobic Systems during Rest and Exercise. Short Duration High Intensity Exercises – High Intensity Exercise Lasting Several Minutes – Long Duration Exercises.

UNIT V – Climatic conditions and sports performance and ergogenic aids

Variation in Temperature and Humidity – Thermoregulation – Sports performance in hot climate, Cool Climate, high altitude. Influence of: Amphetamine, Anabolic steroids, Androstenedione, Beta Blocker, Choline, Creatine, Human growth hormone on sports performance. Narcotic, Stimulants: Amphetamines, Caffeine, Ephedrine, Sympathomimetic amines. Stimulants and sports performance.

Note: Laboratory Practicals in Physiology be designed and arranged internally.

REFERENCES:

- Amrit Kumar, R, Moses. (1995). Introduction to Exercise Physiology. Madras: Poompugar Pathipagam.
- Beotra Alka, (2000) Drug Education Handbook on Drug Abuse in Sports: Sports Authority of India Delhi.
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- Guyton, A.C. (1976). Textbook of Medical Physiology. Philadelphia: W.B. Sanders co.
- Richard, W. Bowers. (1989). Sports Physiology. WMC: Brown Publishers.
- Sandhya Tiwaji. (1999). Exercise Physiology. Sports Publishers.
- Shaver, L. (1981). Essentials of Exercise Physiology. New Delhi: Subject Publications.
- Vincent, T. Murche. (2007). Elementary Physiology. Hyderabad: Sports Publication.
- William, D. Mc Aradle. (1996). Exercise Physiology, Energy, Nutrition and Human
- Performance. Philadelphia: Lippincott Williams and Wilkins Company.

Semester I

Theory Courses

MPCC-103 Yogic Sciences

Unit I – Introduction

Meaning and Definition of Yoga. Astanga Yoga: Yama, Niyama, Aasna, Pranayama, Prathyahara, Dharana, Dhyana, Samadhi, Concept of Yogic Practices; Principles of Breathing– Awareness – Relaxation, Sequence – Counter pose – Time – Place – Clothes – Bathing – Emptying the bowels – Stomach – Diet – No Straining – Age – Contra- Indication – Inverted asana – Sunbathing.

Unit II – Aasanas and Pranayam

Loosening exercise: Techniques and benefits. Asanas: Types- Techniques and Benefits, Surya Namaskar: Methods and benefits. Pranayama: Types- Methods and benefits. Nadis: Meaning, methods and benefits, Chakras: Major Chakaras- Benefits of clearing and balancing Chakras.

Unit III – Kriyas

Shat Kriyas- Meaning, Techniques and Benefits of Neti – Dhati – Kapalapathi- Trataka – Nauli – Basti, Bandhas: Meaning, Techniques and Benefits of Jalendra Bandha, Jihva Bandha, Uddiyana Bandha, Mula Bandha.

Unit IV – Mudras

Meaning, Techniques and Benefits of Hasta Mudras, Asamyukta hastam, Samyukta hastam , Mana Mudra, Kaya Mudra, Banda Mudra, Adhara Mudra. Meditation: Meaning, Techiques and Benefits of Meditation – Passive and active, Saguna Meditation and Nirguna Meditation.

Unit V – Yoga and Sports

Yoga Supplemental Exercise – Yoga Compensation Exercise – Yoga Regeneration Exercise- Power Yoga. Role of Yoga in Psychological Preparation of athlete: Mental Welbeing, Anxiety, Depression Concentration, Self-Actualization. Effect of Yoga on Physiological System: Circulatory, Skeletal, Digestive, Nervous, Respiratory, Excretory Syste.

Note: Laboratory Practicals be designed and arranged internally.

REFERENCE:

- George Feuerstein, (1975). Text Book of Yoga. London: Motilal Bansaridass Publishers (P) Ltd.
- Gore, (1990), Anatomy and Physiology of Yogac Practices. Lonavata: Kanchan Prkashan.
- Helen Purperhart (2004), The Yoga Adventure for Children. Netherlands: A Hunter House book.
- Iyengar, B.K.S. (2000), Light on Yoga. New Delhi: Harper Collins Publishers.
- Karbelkar N.V. (1993) Patanjal Yogasutra Bhashya (Marathi Edition) Amravati: Hanuman Vyayam Prasarak Mandal
- Kenghe. C.T. (1976) Yoga as Depth-Psychology and para-Psychology (Vol-I): Historical
- Background, Varanasi: Bharata Manishai.
- Kuvalyananada Swami & S.L. Vinekar, (1963), Yogic Therapy – Basic Principles and Methods. New Delhi: Govt. of India, Central Health Education and Bureau.

- Moorthy A.M. & Alagesan. S. (2004) Yoga Therapy. Coimbatore: Teachers Publication House.
- Swami Kuvalayanda, (1998), Asanas. Lonavala: Kaivalyadhama.Swami Satyananada Sarasvati. (1989), Asana Pranayama Mudra Bandha. Munger: Bihar School of Yoga.
- Swami Satyananda Saraswathi. (1984), Kundalini and Tantra, Bihar: Yoga Publications Trust.
- Swami Sivananda, (1971), The Science of Pranayama. Chennai: A Divine Life Society Publication.
- Thirumalai Kumar. S and Indira. S (2011) Yoga in Your Life, Chennai: The Parkar Publication.
- Tiwari O.P. (1998), Asanas-Why and How. Lonavala: Kaivalyadham.

Semester I

Theory Courses

MPEC-101 TEST, MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION (Elective)

UNIT I – Introduction

Meaning and Definition of Test, Measurement and Evaluation. Need and Importance of Measurement and Evaluation. Criteria for Test Selection – Scientific Authenticity. Meaning, definition and establishing Validity, Reliability, Objectivity. Norms – Administrative Considerations.

UNIT II – Motor Fitness Tests

Meaning and Definition of Motor Fitness. Test for Motor Fitness; Indiana Motor Fitness Test (for elementary and high school boys, girls and College Men) Oregon Motor Fitness Test (Separately for boys and girls) - JCR test. Motor Ability; Barrow Motor Ability Test – Newton Motor Ability Test – Muscular Fitness – Kraus Weber Minimum Muscular Fitness Test.

UNIT III – Physical Fitness Tests

Physical Fitness Test: AAHPERD Health Related Fitness Battery (revised in 1984), ACSM Health Related Physical Fitness Test, Roger's physical fitness Index. Cardio vascular test; Harvard step test, 12 minutes run / walk test, Multi-stage fitness test (Beep test)

UNIT IV – Anthropometric and Aerobic-Anaerobic Tests

Physiological Testing: Aerobic Capacity: The Bruce Treadmill Test Protocol, 1.5 Mile Run test for college age males and females. Anaerobic Capacity: Margaria-Kalamen test, Wintage. Anaerobic Test, Anthropometric Measurements: Method of Measuring Height: Standing Height, Sitting Height. Method of measuring Circumference: Arm, Waist, Hip, Thigh. Method of Measuring Skin folds: Triceps, Sub scapular, Suprailiac.

UNIT V – Skill Tests

Specific Spots Skill Test: Badminton: Miller Wall Volley Test. Basketball: Johnson Basketball Test, Harrison Basketball Ability Test. Cricket: Sutcliff Cricket test. Hockey: Friendel Field Hockey Test, Harban's Hockey Test, Volleyball, Russel Lange Volleyball Test, Brady Volleyball Test. Football: Mor-Christian General Soccer Ability Skill Test Battery, Johnson Soccer Test, Mc-Donald Volley Soccer Test. Tennis: Dyer Tennis Test.

Note: Practicals of indoor and out-door tests be designed and arranged internally.

REFERENCES:

- Authors Guide (2013) ACSM's Health Related Physical Fitness Assessment Manual, USA: ACSM Publications.
- Collins, R.D., & Hodges P.B. (2001) A Comprehensive Guide to Sports Skills Tests and Measurement (2nd edition) Lanham: Scarecrow Press.
- Cureton T.K. (1947) Physical Fitness Appraisal and Guidance, St. Louis: The C. Mosby Company
- Getchell B (1979) Physical Fitness A Way of Life, 2nd Edition New York, John Wiley and Sons, Inc Jenson, Clayne R and Cynt ha,
- C. Hirst (1980) Measurement in Physical Education and Athletics, New York, Macmillan Publising Co. Inc

- Kansal D.K. (1996), "Test and Measurement in Sports and Physical Education, New Delhi: DVS Publications.
- Krishnamurthy (2007) Evaluation in Physical Education and Sports, New Delhi; Ajay Verma Publication.
- Vivian H. Heyward (2005) Advance Fitness Assessment and Exercise Prescription, 3rd Edition, Dallas TX: The Cooper Institute for Aerobics Research.
- Wilmore JH and Costill DL. (2005) Physiology of Sport and Exercise: 3rd Edition.
- Champaigm IL: Human Kinetics.

Semester I

Theory Courses

MPEC-102 SPORTS TECHNOLOGY (Elective)

Unit I – Sports Technology

Meaning, definition, purpose, advantages and applications, General Principles and purpose of instrumentation in sports, Workflow of instrumentation and business aspects, Technological impacts on sports.

Unit II – Science of Sports Materials

Adhesives- Nano glue, nano moulding technology, Nano turf. Foot wear production, Factors and application in sports, constraints. Foams- Polyurethane, Polystyrene, Styrofoam, closed-cell and open-cell foams, Neoprene, Foam. Smart Materials – Shape Memory Alloy (SMA), Thermo chromic film, High-density modelling foam.

Unit III – Surfaces of Playfields

Modern surfaces for playfields, construction and installation of sports surfaces. Types of materials – synthetic, wood, polyurethane. Artificial turf. Modern technology in the construction of indoor and outdoor facilities. Technology in manufacture of modern play equipments. Use of computer and software in Match Analysis and Coaching.

Unit IV – Modern equipment

Playing Equipments: Balls: Types, Materials and Advantages, Bat/Stick/ Racquets: Types, Materials and Advantages. Clothing and shoes: Types, Materials and Advantages. Measuring equipments: Throwing and Jumping Events. Protective equipments: Types, Materials and Advantages. Sports equipment with nano technology, Advantages.

Unit V – Training Gadgets

Basketball: Ball Feeder, Mechanism and Advantages. Cricket: Bowling Machine, Mechanism and Advantages, Tennis: Serving Machine, Mechanism and Advantages, Volleyball: Serving Machine Mechanism and Advantages. Lighting Facilities: Method of erecting Flood Light and measuring luminous. Video Coverage: Types, Size, Capacity, Place and Position of Camera in Live coverage of sporting events.

Note: Students should be encouraged to design and manufacture improvised sports testing equipment in the laboratory/workshop and visit sports technology factory/ sports goods manufacturers.

REFERENCE:

- Charles J.A. Crane, F.A.A. and Furness, J.A.G. (1987) "Selection of Engineering Materials" UK: Butterworth Heiremann.
- Finn, R.A. and Trojan P.K. (1999) "Engineering Materials and their Applications" UK: Jaico Publisher.
- John Mongilo, (2001), "Nano Technology 101 "New York: Green wood publishing group.
- Walia, J.S. Principles and Methods of Education (Paul Publishers, Jullandhar), 1999.

Semester II

Theory Courses

MPCC-201 APPLIED STATICTICS IN PHYSICAL EDUCATION AND SPORTS

UNIT I – Introduction

Meaning and Definition of Statistics. Function, need and importance of Statistics. Types of Statistics. Meaning of the terms, Population, Sample, Data, types of data. Variables; Discrete, Continuous. Parametric and non-parametric statistics.

UNIT II – Data Classification, Tabulation and Measures of Central Tendency, Meaning, uses and construction of frequency table. Meaning, Purpose, Calculation and advantages of Measures of central tendency – mean, median and mode.

UNIT III – Measures of Dispersions and Scales

Meaning, Purpose, Calculation and advances of Range, Quartile, Deviation, Mean Deviation, Standard Deviation, Probable Error. Meaning, Purpose, Calculation and advantages of scoring scales; Sigma scale, Z Scale, Hull scale

UNIT IV – Probability Distributions and Graphs

Normal Curve. Meaning of probability- Principles of normal curve – Properties of normal curve. Divergence form normality – Skewness and Kurtosis. Graphical Representation in Statistics; Line diagram, Bar diagram, Histogram, Frequency Polygon, Ogive Curve.

UNIT V – Inferential and Comparative Statistics

Tests of significance; Independent "t" test, Dependent "t" test – chi – square test, level of confidence and interpretation of data. Meaning of correlation – co-efficient of correlation – calculation of co- efficient of correlation by the product moment method and rank difference method. Concept of ANOVA and ANCOVA.

Note : It is recommended that the theory topics be accompanied with practical, based on computer software of statistics.

REFERENCE:

- Best J. W (1971) Research in Education, New Jersey; Prentice Hall, Inc
- Clark D.H. (1999) Research Problem in Physical Education 2nd edition, Eaglewood Cliffs, Prentice Hall, Inc.
- Jerry R Thomas & Jack K Nelson (2000) Research Methods in Physical Activities; Illonosis; Human Kinetics;
- Kamlesh, M. L. (1999) Reserach Methodology in Physical Education and Sports, New Delhi Rothstain A (1985) Research Design and Statistics for Physical Education, Englewood Cliffs: Prentice Hall, Inc
- Sivaramakrishnan. S. (2006) Statistics for Physical Education, Delhi; Friends Publication Thirumalaisamy (1998), Statistics in Physical Education, Karaikudi, Senthilkumar Publications.

Semester II

Theory Courses

MPCC-202 SPORTS BIOMECHANICS AND KINSESIOLOGY

UNIT I – Introduction

Meaning, nature, role and scope of Applied kinesiology and Sports Biomechanics. Meaning of Axis and Planes, Dynamics, Kinematics, Kinetics, Statics Centre of gravity -Line of gravity plane of the body and axis of motion, Vectors and Scalars.

UNIT II – Muscle Action

Origin, Insertion and action of muscles: Pectoralis major and minor, Deltoid, Biceps, Triceps (Anterior and Posterior), Trapezius, serratus, Sartorius, Rectus femoris, Abdominis, Quadriceps, Hamstring, Gastrocnemius.

UNIT III – Motion and Force

Meaning and definition of Motion. Types of Motion: Linear motion, angular motion, circular motion, uniform motion. Principals related to the law of Inertia, Law of acceleration, and law of counter force. Meaning and definition of force- Sources of force - Force components .Force applied at an angle - pressure -friction -Buoyancy, Spin - Centripetal force - Centrifugal force.

UNIT IV – Projectile and Lever

Freely falling bodies - Projectiles -Equation of projectiles stability Factors influencing equilibrium - Guiding principles for stability -static and dynamic stability. Meaning of work, power, energy, kinetic energy and potential energy. Leverage -classes of lever - practical application. Water resistance - Air resistance -Aerodynamics.

Note: Laboratory practicals should be designed and arranged for students internally.

UNIT V – Movement Analysis

Analysis of Movement: Types of analysis: Kinesiological, Biomechanical. Cinematographic.
Methods of analysis – Qualitative, Quantitative, Predictive

REFERENCE:

- Deshpande S.H.(2002). Manav Kriya Vigyan – Kinesiology (Hindi Edition) Amravati :Hanuman Vyayam Prasarak Mandal.
- Hoffman S.J. Introduction to Kinesiology (Human Kinesiology publication In.2005. Steven Roy, & Richard Irvin. (1983). Sports Medicine. New Jersery: Prentice hall. Thomas. (2001). Manual of structural Kinesiology, New York: Me Graw Hill. Uppal A.K. Lawrence Mamta MP Kinesiology(Friends Publication India 2004)
- Uppal, A (2004), Kinesiology in Physical Education and Exercise Science, Delhi Friends publications.
- Williams M (1982) Biomechanics of Human Motion, Philadelphia; Saunders Co.

Semester II

Theory Courses

MPCC-203 ATHLETIC CARE AND REHABILITATION

Unit I – Corrective Physical Education

Definition and objectives of corrective physical Education. Posture and body mechanics, Standards of Standing Posture. Value of good posture, Drawbacks and causes of bed posture. Posture test – Examination of the spine.

Unit II – Posture

Normal curve of the spine and its utility, Deviations in posture: Kyphosis, lordosis, flat back, Scoliosis, round shoulders, Knock Knee, Bow leg, Flat foot. Causes for deviations and treatment including exercises.

Unit III – Rehabilitation Exercises

Passive, Active, Assisted, Resisted exercise for Rehabilitation, Stretching, PNF techniques and principles.

Unit IV – Massage

Brief history of massage – Massage as an aid for relaxation – Points to be considered in giving massage – Physiological , Chemical, Psychological effects of massage – Indication / Contra indication of Massage – Classification of the manipulation used massage and their specific uses in the human body – Stroking manipulation: Effleurage – Pressure manipulation: Petrissage Kneading (Finger, Kneading, Circular) ironing Skin Rolling – Percussion manipulation: Tapotement, Hacking, Clapping, Beating, Pounding, Slapping, Cupping, Poking, Shaking Manipulation, Deep massage.

Unit V – Sports Injuries Care, Treatment and Support

Principles pertaining to the prevention of Sports injuries – care and treatment of exposed and unexposed injuries in sports – Principles of apply cold and heat, infrared rays – Ultrasonic, Therapy – Short wave diathermy therapy. Principles and techniques of Strapping and Bandages.

Note: Each student shall submit Physiotherapy record of attending the Clinic and observing the cases of athletic injuries and their treatment procedure.(To be assessed internally)

REFERENCES:

- Dohenty. J. Meno.Wetb, Moder D (2000) Track & Field, Englewood Cliffs, Prentice Hal Inc.
- Lace, M. V. (1951) Massage and Medical Gymnastics, London: J & A Churchill Ltd.
- Mc Ooyand Young (1954) Tests and Measurement, New York: Appleton Century.
- Naro, C. L. (1967) Manual of Massage and, Movement, London: Febra and Febra Ltd.
- Rathbome, J.l. (1965) Corrective Physical education, London: W.B. Saunders & Co.
- Stafford and Kelly, (1968) Preventive and Corrective Physical Education, New York.

Semester II

Theory Courses

MPEC-201 SPORTS JOURNALISM AND MASS MEDIA (Elective)

UNIT I Introduction

Meaning and Definition of Journalism, Ethics of Journalism – Canons of journalism- Sports Ethics and Sportsmanship – Reporting Sports Events. National and International Sports News Agencies.

UNIT II Sports Bulletin

Concept of Sports Bulletin: Journalism and sports education – Structure of sports bulletin – Compiling a bulletin – Types of bulletin – Role of Journalism in the Field of Physical Education: Sports as an integral part of Physical Education – Sports organization and sports journalism – General news reporting and sports reporting.

UNIT III Mass Media

Mass Media in Journalism: Radio and T.V. Commentary – Running commentary on the radio – Sports expert's comments. Role of Advertisement in Journalism. Sports Photography: Equipment- Editing – Publishing.

UNIT IV Report Writing on Sports

Brief review of Olympic Games, Asian Games, Common Wealth Games World Cup, National Games and Indian Traditional Games. Preparing report of an Annual Sports Meet for Publication in Newspaper. Organization of Press Meet.

UNIT –V Journalism

Sports organization and Sports Journalism – General news reporting and sports reporting. Methods of editing a Sports report. Evaluation of Reported News. Interview with and elite Player and Coach.

Practical assignments to observe the matches and prepare report and news of the same; visit to News Paper office and TV Centre to know various departments and their working. Collection of Album of newspaper cuttings of sports news.

REFERENCE:

- Ahiya B.N. (1988) Theory and Practice of Journalism: Set to Indian context Ed3. Delhi :Surjeet Publications.
- Ahiya B.N. Chobra S.S.A. (1990) Concise Course in Reporting. New Delhi: Surjeet Publication.
- Bhatt S.C. (1993) Broadcast Journalism Basic Principles. New Delhi. Haranand Publication.
- Dhananjay Joshi (2010) Value Education in Global Perspective. New Delhi: Lotus Press.
- Kannan K (2009) Soft Skills, Madurai: Madurai: Yadava College Publication
- Mohit Chakrabarti (2008): Value Education: Changing Perspective, New Delhi: Kanishka Publication.
- Padmanabhan. A & Perumal A (2009), Science and Art of Living, Madurai: Pakavathi Publication.

Semester II

Theory Courses

MPEC-202 SPORTS MANAGEMENT AND CURRICULUM DESIGN IN PHYSICAL EDUCATION (Elective)

UNIT I – Introduction to Sports Management

Definition, Importance. Basic Principles and Procedures of Sports Management. Functions of Sports Management. Personal Management: Objectives of Personal Management, Personal Policies, Role of Personal Manager in an organization, Personnel recruitment and selection.

UNIT II – Program Management

Importance of Programme development and the role of management, Factors influencing programme development. Steps in programme development, Competitive Sports Programs, Benefits, Management Guidelines for School, Colleges Sports Programs, Management Problems in instruction programme, Community Based Physical Education and Sports program.

UNIT III – Equipments and Public Relation

Purchase and Care of Supplies of Equipment, Guidelines for selection of Equipments and Supplies, Purchase of equipments and supplies, Equipment Room, Equipment and supply Manager. Guidelines for checking, storing, issuing, care and maintenance of supplies and equipments. Public Relations in Sports: Planning the Public Relation Program – Principles of Public Relation – Public Relations in School and Communities – Public Relation and the Media.

UNIT IV – Curriculum

Meaning and Definition of Curriculum. Principles of Curriculum Construction: Students centred, Activity centred, Community centred, Forward looking principle, Principles of integration, Theories of curriculum development, Conservative (Preservation of Culture), Relevance, flexibility, quality, contextually and plurality. Approaches to Curriculum; Subject centred, Learner centred and Community centred, Curriculum Framework.

UNIT V – Curriculum Sources

Factors that affecting curriculum: Sources of Curriculum materials – text books – Journals – Dictionaries, Encyclopaedias, Magazines, Internet. Integration of Physical Education with other Sports Sciences – Curriculum research, Objectives of Curriculum research – Importance of Curriculum research. Evaluation of Curriculum, Methods of evaluation.

REFERENCE:

- Aggarwal, J.C (1990). Curriculum Reform in India – World overviews, Doaba World Education Series – 3 Delhi: Doaba House, Book seller and Publisher.
- Arora, G.L. (1984): Reflections on Curriculum, New Delhi: NCERT.
- Bonnie, L. (1991). The Management of Sports. St. Louis: Mosby Publishing Company, Park House.
- Bucher A. Charles, (1993) Management of Physical Education and Sports (10^{th} ed.,) St.Louis: Mobsy Publishing Company.
- Carl, E, Willgoose. (1982. Curriculum in Physical Education, London: Prentice Hall. Chakraborthy & Samiran. (1998). Sports Management. New Delhi: Sports Publication. Charles, A, Bucher & March, L, Krotee. (1993). Management of Physical Education and Sports. St. Louis: Mosby Publishing Company.
- Chelladurai, P. (1999). Human Resources Management in Sports and Recreation. Human Kinetics.
- John, E, Nixon & Ann, E, Jewett. (1964). Physical Education Curriculum, New York:The Ronald Press Company.

Semester III

Theory Courses

MPCC-301 SCIENTIFIC PRINCIPLES OF SPORTS TRAINING

UNIT I – Introduction

Sports training: Definition – Aim, Characteristics, Principles of Sports Training, Over Load: Definition, Causes of Over Load, Symptoms of Overload, Remedial Measures – Super Compensation – Altitude Training – Cross Training.

UNIT II – Components of Physical Fitness

Strength: Methods to improve Strength: Weight Training, Isometric, Isotonic, Circuit Training, Speed: Methods to Develop Speed: Repetition Method, Downhill Run, Parachute Running, Wind Sprints, Endurance, Methods to Improve Endurance: Continuous Method, Interval Method, Repetition Method, Cross Country, Fartlek Training

UNIT III – Flexibility

Flexibility: Methods to Improve the Flexibility- Stretch and Hold Method, Ballistic Method,
Special Type Training: Plyometric Training. Training for Coordinative abilities: Methods to improve Coordinative abilities: Sensory Method, Variation in Movement Execution Method, Variation in External Condition Method, Combination of Movement Method, Types of Stretching Exercises.

UNIT IV – Training Plan

Training Plan: Macro Cycle, Meso-Cycle. Short Term Plan and Long Term Plans - Periodisation: Meaning, Single, Double and Multiple Periodisation, Preparatory Period, Competition Period and Transition Period.

UNIT V – Doping

Definition of Doping – Side effects of drugs – Dietary supplements – IOC list of doping classes and methods. Blood Doping – The use of erythropoietin in blood boosting – Blood doping control – The testing programmes – Problems in drug detection – Blood testing in doping control – Problems with the supply of medicines Subject to IOC regulations: over-the- counter drugs (OTC) – prescription only medicines (POMs) – Controlled drugs (CDs). Reporting test results – Education.

REFERENCES:

- Beotra Alka, (2000), Drug Education Handbook on Drug Abuse in Sports. Delhi: Sports Authority of India.
- Bunn, J.N. (1998) Scientific Principles of Coaching, New Jersey Engle Wood Cliffs, Prentice Hall Inc.
- Cart, E. Klafs &Daniel, D. Arnheim (1999) Modern Principles of Athletic Training St. Louis C. V. Mosphy Company Daniel, D. Arnheim (1991) Principles of Athletic Traning, St. Luis, Mosby Year Book.
- David R. Mottram (1996) Drugs in Sport, School of Pharmacy, Liverpool: John Moore UniversityGary, T. Moran (1997) – Cross Training for Sports, Canada : Human Kinetics Hardayal Singh (1991) Science of Sports Training, New Delhi, DVS Publications Jensen, C.R. & Fisher A.G. (2000) Scientific Basic of Athletic Conditioning, Philadelphia Ronald, P. Pfeiffer (1998) Concepts of Athletics Training 2nd Edition, London: Jones and Bartlett Publications
- Yograj Thani (2003), Sports Training, Delhi : Sports Publications

Semester III

Theory Courses

MPCC-302 SPORTS MEDICINE

UNIT I – Introduction

Meaning, definition and importance of Sports Medicine, Definition and Principles of therapeutic exercises. Coordination exercise, Balance training exercise, Strengthening exercise, Mobilization exercise, Gait training, Gym ball exercise Injuries: acute, sub-acute, chronic. Advantages and Disadvantages of PRICE, PRINCE therapy, Aquatic therapy.

UNIT II – Basic Rehabilitation

Basic Rehabilitation:Strapping/Tapping:Definition,Principles Precautions Contraindications. Proprioceptive neuromuscular facilitation: Definition hold, relax, repeated contractions. Show reversal technique exercises. Isotonic, Isokinetic, isometric stretching. Definition. Types of stretching, Advantages, dangers of stretching, Manual muscle grading.

UNIT III – Spine Injuries and Exercise

Head, Neck and Spine injuries: Causes, Presentational of Spinal anomalies, Flexion, Compression, Hyperextension, Rotation injuries. Spinal range of motion. Free hand exercises, stretching and strengthening exercise for head neck, spine. Supporting and aiding techniques and equipment for Head, Neck and Spine injuries.

UNIT IV – Upper Extremity Injuries and Exercise

Upper Limb and Thorax Injuries: Shoulder: Sprain, Strain, Dislocation, and Strapping. Elbow: Sprain, Strain, Strapping. Wrist and Fingers: Sprain Strain, Strapping. Thorax, Rib fracture. Breathing exercises, Relaxation techniques, Free hand exercise, Stretching and strengthening exercise for shoulder, Elbow, Wrist and Hand. Supporting and aiding techniques and equipment for Upper Limb and Thorax Injuries.

UNIT V – Lower Extremity Injuries and Exercise

Lower Limb and Abdomen Injuries: Hip: Adductor strain, Dislocation, Strapping. Knee: Sprain, Strain, Strain, Strapping. Ankle: Sprain, Strain, Strapping. Abdomen: Abdominal wall, Contusion, Abdominal muscle strain. Free exercises – Stretching and strengthening exercise for Hip, knee, ankle and Foot. Supporting and aiding techniques and equipment for Lower limb and Abdomen injures.

Practicals: Lab. Practicals and visit to Physiotherapy Centre to observe treatment procedure of sports injuries; data collection of sports injury incidences, Visit to TV Centre etc. should be planned internally.,

REFERENCES:

- Christopher M. Norris. (1993). Sports Injures Diagnosis and Management for Physiotherapists. East Kilbride: Thomson Litho Ltd.
- James, A. Gould & George J. Davies. (1985). Physical Physical Therapy. Toronto: C.V. Mosby Company.
- Morris B. Million (1984) Sports Injuries and Athletic Problem. New Delhi: Surjeet Publication.
- Pande. (1998). Sports Medicine. New delhi: Khel Shitya Kendra.The Encyclopedia of Sports Medicine. (1998). The Olympic Book of Sports Medicine, Australia: Tittel Blackwell Scientific publications. Practical: Anthropometric Measurements,

Semester III

Theory Courses

MPCC-303 HEALTH EDUCATION AND SPORTS NURTITION

Unit - I Health Education

Concept, Dimensions, Spectrum and Determinants of Health Definition of Health, Health Education, Health Instruction, Health Supervision Aim, objective and Principles of Health Education, Health Service and guidance instruction in personal hygiene

Unit - II Health Problems in India

Communicable and Non Communicable Diseases, Obesity, Malnutrition, Adulteration in food, Environmental sanitation, Explosive, Population, Personal and Environmental Hygiene for schools Objective of school health service, Role of health education in schools

Health Services - Care of skin, Nails, Eye health service, Nutritional service, Health appraisal, Health record, Healthful school environment, first- aid and emergency care etc.

Unit- III – Hygiene and Health

Meaning of Hygiene, Type of Hygiene, dental Hygiene, Effect of Alcohol on Health, Effect of Tobacco on Health, Life Style Management, Management of Hypertension, Management of Obesity, Management of Stress

Unit – IV- Introduction to Sports Nutrition

Meaning and Definition of Sports Nutrition, Role of nutrition in sports, Basic Nutrition guidelines, Nutrients: Ingestion to energy metabolism (Carbohydrate, Protein and Fat), Role of carbohydrates, Fat and protein during exercise.

Unit – V Nutrition and Weight Management

Concept of BMI (Body mass index), Obesity and its hazard, Dieting versus exercise for weight control Maintaining a Healthy Lifestyle, Weight management program for sporty child, Role of diet and exercise in weight management, Design diet plan and exercise schedule for weight gain and loss.

References:

- Bucher, Charles A. "Administration of Health and Physical Education Programme".
- Delbert, Oberteuffer, et. al." The School Health Education".
- Ghosh, B.N. "Treaties of Hygiene and Public Health".
- Hanlon, John J. "Principles of Public Health Administration" 2003.
- Turner, C.E. "The School Health and Health Education".
- Moss and et. At. "Health Education" (National Education Association of U.T.A.) Nemir A. 'The School Health Education" (Harber and Brothers, New York). Nutrition Encyclopedia, edited by Delores C.S. James, The Gale Group, Inc. Boyd-Eaton S. et al (1989) The Stone Age Health Programme: Diet and Exercise as Nature Intended. Angus and Robertson.
- Terras S. (1994) Stress, How Your Diet can Help: The Practical Guide to Positive Health Using Diet, Vitamins, Minerals, Herbs and Amino Acids, Thorons.

Semester III

Theory Courses

MPEC-301 SPORTS ENGINEERING (Elective)

Unit - I Introduction to sports engineering and Technology

Meaning of sports engineering, human motion detection and recording, human performance, assessment, equipment and facility designing and sports related instrumentation and measurement.

Unit - II Mechanics of engineering materials

Concept of internal force, axial force, shear force, bending movement, torsion, energy method to find displacement of structure, strain energy. Biomechanics of daily and common activities –Gait, Posture, Body levers, ergonomics, Mechanical principles in movements such as lifting, walking, running, throwing, jumping, pulling, pushing etc.

Unit- III Sports Dynamics

Introduction to Dynamics, Kinematics to particles – rectilinear and plane curvilinear motion coordinate system. Kinetics of particles – Newton's laws of Motion, Work, Energy, Impulse and momentum.

Unit- IV Building and Maintenance:

Sports Infrastructure- Gymnasium, Pavilion, Swimming Pool, Indoor Stadium, Out-door Stadium, Play Park, Academic Block, Administrative Block, Research Block, Library, Sports Hostels, etc.

Requirements: Air ventilation, Day light, Lighting arrangement, Galleries, Store rooms, Office, Toilet Blocks (M/F), Drinking Water, Sewage and Waste Water disposal system, Changing Rooms (M/F), Sound System (echo-free), Internal arrangement according to need and nature of activity to be performed, Corridors and Gates for free movement of people, Emergency provisions of lighting, fire and exits, Eco-friendly outer surrounding. Maintenance staff, financial consideration.

Building process: - design phase (including brief documentation), construction phase functional (occupational) life, Re-evaluation, refurnish, demolish.

Maintenance policy, preventive maintenance, corrective maintenance, record and register for maintenance.

Unit – V Facility life cycle costing

Basics of theoretical analysis of cost, total life cost concepts, maintenance costs, energy cost, capital cost and taxation

REFERENCE:

- Franz K. F. et. al., Editor, Routledge Handbook of Sports Technology and Engineering (Routledge, 2013)
- Steve Hake, Editor, The Engineering of Sport (CRC Press, 1996)
- Franz K. F. et. al., Editor The Impact of Technology on Sports II (CRC Press, 2007)
- Helge N., Sports Aerodynamics (Springer Science & Business Media, 2009) Youlin Hong, Editor Routledge Handbook of Ergonomics in Sport and Exercise (Routledge, 2013).
- Jenkins M., Editor Materials in Sports Equipment, Volume I (Elsevier, 2003)

  Colin White, Projectile Dynamics in Sport: Principles and Applications.
- Eric C. et al., Editor Sports Facility Operations Management (Routledge, 2010)

Semester III

Theory Courses

MPEC-302 PHYSICAL FITNESS AND WELLNESS (Elective)

Unit I – Introduction

Meaning and Definition" of Physical Fitness, Physical Fitness Concepts and Techniques, Principles of physical fitness, Physiological principles involved in human movement. Components of Physical Fitness. Leisure time physical activity and identify opportunities in the community to participate in this activity. Current trends in fitness and conditioning, components of total health fitness and the relationship between physical activity and lifelong wellness.

Unit II – Nutrition

Nutrients; Nutrition labelling information, Food Choices, Food Guide Pyramid, Influences on food choices-social, economic, cultural, food sources, Comparison of food values. Weight Management-proper practices to maintain, lose and gain. Eating Disorders, Proper hydration, the effects of performance enhancement drugs.

Unit III – Aerobic Exercise

Cardio respiratory Endurance Training; proper movement forms, i.e., correct stride, arm movements, body alignment; proper warm-up, cool down, and stretching, monitoring heart rates during activity. Assessment of cardio respiratory fitness and set goals to maintain or improve fitness levels. Cardio respiratory activities including i.e. power walking, pacer test, interval training, incline running, distance running, aerobics and circuits.

Unit IV – Anaerobic Exercise

Resistance Training for Muscular Strength and Endurance; principles of resistance training, Safety techniques (spotting, proper body alignment, lifting techniques, spatial, awareness. and proper breathing techniques). Weight training principles and concepts; basic resistance exercises (including free hand exercise, free weight exercise, weight machines, exercise bands and tubing. medicine balls, fit balls) Advanced techniques of weight training

Unit V – Flexibility Exercise

Flexibility Training, Relaxation Techniques and Core Training. Safety techniques (stretching protocol; breathing and relaxation techniques) types of flexibility exercises (i.e. dynamic, static), Develop basic competency in relaxation and breathing techniques. Pilates, Yoga.

REFERENCE:

- David K. Miller & T. Earl Allen, Fitness, A life time commitment, Surjeet Publication Delhi 1989.
- Dificore Judy, the complete guide to the postnatal fitness, A & C Black Publishers Ltd. 35 Bedford row, London 1998
- Dr. A.K. Uppal, Physical Fitness, Friends Publications (India), 1992. Warner W.K. Oeger & Sharon A. Hoeger, Fitness and Wellness, Morton Publishing Company, 1990.
- Elizabeth & Ken day, Sports fitness for women, B.T. Batsford Ltd, London, 1986.
- Emily R. Foster, Karyn Hartiger & Katherine A. Smith, Fitness Fun, Human Kinetics Publishers 2002.
- Lawrence, Debbie, Exercise to Music. A & C Black Publishers Ltd. 37, Sohe Square, London 1999.
- Robert Malt. 90 day fitness plan, D.K. publishing, Inc. 95, Madison Avenue, New York 2001.

Semester III

Theory Courses

MPOEC-302 HEALTH, FITNESS AND WELINESS

Maximum Marks: 50

Unit I - Health and Health Education

Concept of Health- Meaning and scope of Health and health Education, Concept of Physical, Mental, Social and Spiritual health and factors affecting them. Health hazards of modern age. Role of World Health Organization. Voluntary Health Agencies and Health Clubs.

Unit II - Concept and Importance of Physical Fitness and Wellness Physical Fitness.

Categories, Components, Systems Related, Factors Affecting and Values of Physical Fitness. Types of Physical Fitness, Components of Health Related Physical Fitness and Components of Motor Skill Related Physical Fitness. Wellness: Importance, Concept, Components, Benefits and Challenges of Wellness.

Unit III - Development and Maintenance of Physical Fitness and Wellness.

Means of Fitness Development- Physical Fitness and cardiovascular fitness. The six commandments for Fitness and Exercise – A Way of Life; Regularity of exercise, Footwear, When to exercise, Motivation, Cooling down, cardiovascular fitness evaluations.

Semester IV

Theory Courses

MPCC-401 INFORMATION & COMMUNICATION TECHNOLOGY (ICT) IN PHYSICAL EDUCATION

Unit I – Communication & Classroom Interaction

Concept, Elements, Process & Types of Communication, Communication Barriers & Facilitators of communication Communicative skills of English - Listening, Speaking, Reading & Writing Concept & Importance of ICT Need of ICT in Education Scope of ICT: Teaching Learning Process, Publication Evaluation, Research and Administration Challenges in Integrating ICT in Physical Education.

Unit II – Fundamentals of Computers

Characteristics, Types & Applications of Computers Hardware of Computer: Input, Output & Storage Devices Software of Computer: Concept & Types Computer Memory: Concept & Types Viruses & its Management Concept, Types & Functions of Computer Networks Internet and its Applications Web Browsers & Search Engines Legal & Ethical Issues.

Unit III – MS Office Applications

MS Word: Main Features & its Uses in Physical Education.
MS Excel: Main Features & its Applications in Physical Education MS Access: Creating a Database, Creating a Table, Queries, Forms & Reports on Tables and its Uses in Physical Education.
MS Power Point: Preparation of Slides with Multimedia Effects
MS Publisher: Newsletter & Brochure

Unit IV – ICT Integration in Teaching Learning Process

Approaches to Integrating ICT in Teaching Learning Process, Project Based Learning (PBL) Co-Operative Learning, Collaborative Learning, ICT and Constructivism: A Pedagogical Dimension.

Unit V – E-Learning & Web Based Learning

E-Learning, Web Based Learning, Visual Classroom

REFERENCES:

- B. Ram, New Age International Publication, Computer Fundamental, Third Edition-2006 Brain under IDG Book. India (p) Ltd Teach Yourself Office 2000, Fourth Edition- 2001.
- Douglas E. Comer, The Internet Book, Purdue University, West Lafayette in 2005 Heidi Steel Low price Edition, Microsoft Office Word 2003- 2004 ITL Education Solution Ltd. Introduction to information Technology, Research and Development Wing-2006.
- Pradeep K. Sinha & Priti; Sinha, Foundations computing BPB Publications -2006.

  Rebecca Bridges Altman Peach pit Press, Power point for window, 1999
- Sanjay Saxena, Vikas Publication House, Pvt. Ltd. Microsoft Office for ever one, Second Edition-2006.

Semester IV

Theory Courses

MPCC-402 SPORTS PSYCHOLOGY

UNIT I - Introduction

Meaning, Definition, History, Need and Importance of Sports Psychology. Present Status of Sports Psychology in India. Motor Learning: Basic Considerations in Motor Learning – Motor Perception – Factors Affecting Perception – Perceptual Mechanism. Personality: Meaning, Definition, Structure – Measuring Personality Traits. Effects of Personality on Sports Performance.

UNIT II - Motivation

Meaning and Definition, Types of Motivation: Intrinsic, Extrinsic. Achievement Motivation: Meaning, Measuring of Achievement Motivation. Anxiety: Meaning and Definition, Nature, Causes, Method of Measuring Anxiety. Competitive Anxiety and Sports Performance. Stress: Meaning and Definition, Causes. Stress and Sports Performance. Aggression: Meaning and Definition, Method of Measurement. Aggression and Sports Performance. Self-Concept: Meaning and Definition, Method of Measurement.

UNIT III – Goal Setting

Meaning and Definition, Process of Goal Setting in Physical Education and Sports. Relaxation: Meaning and Definition, types and methods of psychological relaxation. Psychological Tests: Types of Psychological Test: Instrument based tests: Pass-along test – Tachistoscope – Reaction timer – Finger dexterity board – Depth perception box – Kinesthesiometer board. Questionnaire: Sports Achievement Motivation, Sports Competition Anxiety.

UNIT IV – Sports Sociology

Meaning and Definition – Sports and Socialization of Individual Sports as Social Institution. National Integration through Sports. Fans and Spectators: Meaning and definition, Advantages and disadvantages on Sports Performance. Leadership: Meaning, Definition, types. Leadership and Sports Performance.

UNIT V – Group Cohesion

Group: Definition and Meaning, Group Size, Groups on Composition, Group Cohesion, Group Interaction, Group Dynamics. Current Problems in Sports and Future Directions – Sports Social Crisis Management – Women in Sports: Sports Women in our Society, Participation pattern among Women, Gender inequalities in Sports.

Practicals: *Atleast five experiments related to the topics listed in the Units above should be conducted by the students in laboratory. (Internal assessment)*

REFERENCES:

Authors Guide (2013) National Library of Educational and Psychological Test (NLEPT) Catalogue of Tests, New Delhi: National Council of Educational Research and Training Publication.

Authors Guide (2013) National Library of Educational and Psychological Test (NLEPT) Catalogue of Test, New Delhi: National Council of Educational Research and Training Publication.

Jain. (2002), Sports Sociology, Heal Sahety Kendre Publishers.

Jay Coakley. (2001) Sports in Society – Issues and Controversies in International Education, Mc-Craw Seventh Ed.

John D Lauther (2000) Psychology of Coaching. Ner Jersy: Prenticce Hall Inc.

John D. Lauther (1998) Sports Psychology. Englewood, Prentice Hall Inc.

Miroslaw Vauks & Bryant Cratty (1999). Psychology and the Superior Athlete. London: The Macmillan Co.

Richard, J. Crisp. (2000). Essential Social Psychology. Sage Publications.

Robert N. Singer (2001). Motor Learning and Human Performance. New York: The Macmillan Co.

Robert N. Singer. (1989) The Psychology Domain Movement Behaviour. Philadelphia: Lea and Febiger.

helma Horn. (2002). Advances in Sports Psychology. Human Kinetic.

Whiting, K, Karman.,. Hendry L.B & Jones M.G. (1999) Personality and Performance in Physical Education and Sports. London: Hendry Kimpton Publishers.

Semester IV

Theory Courses

MPCC-403 DISSERTATION

1. A candidate shall have dissertation for M.P.Ed. – IV Semester and must submit his/her Synopsis and get it approved by the Head of Department on the recommendation of D.R.C. (Departmental Research Committee).
2. A candidate selecting dissertation must submit his/her dissertation not less than one week before the beginning of the IVth Semester Examination.
3. The candidate has to face the Viva-Voce conducted by DRC.

Semester IV

Theory Courses

MPEC-401 VALUE AND ENVIRONMENTAL EDUCATION

UNIT I – Introduction to Value Education.

Values: Meaning, Definition, Concepts of Values. Value Education: Need, Importance and Objectives. Moral Values: Need and Theories of Values. Classification of Values: Basic Values of Religion, Classification of Values.

UNIT II – Value Systems

Meaning and Definition, Personal and Communal Values, Consistency, Internally consistent, internally inconsistent, Judging Value System, Commitment, Commitment to values.

Unit- III – Environmental Education

Definition, Scope, Need and Importance of environmental studies., Concept of environmental education, Historical background of environmental education, Celebration of various days in relation with environment, Plastic recycling & prohibition of plastic bag / cover, Role of school in environmental conservation and sustainable development, Pollution free eco-system.

Unit - IV Rural Sanitation and Urban Health

Rural Health Problems, Causes of Rural Health Problems, Points to be kept in Mind for improvement of Rural Sanitation, Urban Health Problems, Process of Urban Health, Services of Urban Area, Suggested Education Activity, Services on Urban Slum Area, Sanitation at Fairs & Festivals, Mass Education.

Unit - V Natural Resources and related environmental issues:

Water resources, food resources and Land resources, Definition, effects and control measures of: Air Pollution, Water Pollution, Soil Pollution, Noise Pollution, Thermal Pollution Management of environment and Govt. policies, Role of pollution control board.

REFERENCE:

- Miller T.G. Jr., Environmental Science (Wadsworth Publishing Co.) Odum, E.P. Fundamentals of Ecology (U.S.A.: W.B. Saunders Co.) 1971.
- Rao, M.N. & Datta, A.K. Waste Water Treatment (Oxford & IBH Publication Co. Pvt. Ltd.) 1987
- Townsend C. and others, Essentials of Ecology (Black well Science)
- Heywood, V.H. and Watson V.M., Global biodiversity Assessment (U.K.: Cambridge University Press), 1995.
- Jadhav, H. and Bhosale, V.M. Environmental Protection and Laws (Delhi: Himalaya Pub. House), 1995.
- Mc Kinney, M.L. and Schoel, R.M. Environmental Science System and Solution (Web enhanced Ed.) 1996.
- Miller T.G. Jr., Environmental Science (Wadsworth Publishing Co.)

Semester IV
Theory Courses
MPEC-402 EDUCATION TECHNOLOGY IN PHYSICAL EDUCATION AND SPORTS

Unit I – Nature and Scope

Educational technology-concept, Nature and Scope. Forms of educational technology: teaching technology, instructional technology, and behaviour technology; Transactional usage of educational technology: integrated, complementary, supplementary stand-alone (independent); programmed learning stage; media application stage and computer application stage.

Unit II – Systems Approach to Physical Education and Communication

Systems Approach to Education and its Components: Goal Setting, Task Analysis, Content Analysis, Context Analysis and Evaluation Strategies; Instructional Strategies and Media for Instruction. Effectiveness of Communication in instructional system; Communication - Modes, Barriers and Process of Communication.

Unit III- Instructional Design

Instructional Design: Concept, Views. Process and stages of Development of Instructional Design. Overview of Models of Instructional Design; Instructional Design for Competency Based Teaching: Models for Development of Self Learning Material.

Unit IV – Audio Visual Media in Physical Education

Audio-visual media - meaning, importance and various forms Audio/Radio: Broadcast and audio recordings - strengths and Limitations, criteria for selection of instructional units, script writing, pre-production, post-production process and practices, Audio Conferencing and Interactive Radio Conference. Video/Educational Television: Telecast and Video recordings Strengths and limitations, Use of Television and CCTV in instruction and Training, Video Conferencing, SITE experiment, countrywide classroom project and Satellite based instructions. Use of animation films for the development of children's imagination.

Unit V – New Horizons of Educational Technology

Recent innovations in the area of ET interactive video - Hypertext, video-texts, optical fiber technology - laser disk, computer conferencing. etc. Procedure and organization of Teleconferencing/Interactive video-experiences of institutions, schools and universities. Recent experiments in the third world countries and pointers for, India with reference to Physical education. Recent trends of Research in Educational Technology and its future with reference to education.

REFERENCE:

- Amita Bhardwaj, New Media of Educational Planning".Sarup of Sons, New Delhi-2003 Bhatia and Bhatia. The Principles and Methods of Teaching (New Delhi : Doaba House), 1959.
- Communication and Education, D. N. Dasgupta, Pointer Publishers Education and Communication for development, O. P. Dahama, O. P. Bhatnagar, Oxford Page 68 of 71 IBH Publishing company, New Delhi.
- Essentials of Educational Technology, Madan Lal, Anmol Publications
- K. Sampath, A. Pannirselvam and S. Santhanam. Introduction to Educational Technology (New Delhi: Sterling Publishers Pvt. Ltd.): 1981.
- Kochar, S.K. Methods and Techniques of Teaching (New Delhi, Jalandhar, Sterling Publishers Pvt. Ltd.), 1982 Kozman, Cassidy and k Jackson. Methods in Physical Education (W.B. Saunders Company, Philadelphia and London), 1952.