TAMILNADU PHYSICAL EDUCATION AND SPORTS UNIVERSITY, CHENNAI

The details of the courses having focused on Employability / Entrepreneurship / Skill Development offered by this University are attached herewith.

Tamil Nadu Physical Education and Sports University
Chennai
600 127.

Registrar

Registrar
Tamilnadu Physical Education
and
Sports University
Chennai

TAMIL NADU PHYSICAL EDUCATION AND SPORTS UNIVERSITY
MELAKKOTTAIYUR POST CHENNAI - 600 127

DEPARTMENT OF YOGA
M.Sc., YOGA
(Two years Regular Programme)
CHOICE BASED CREDIT SYSTEM (CBCS)

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO – 1 : To equip the participants to run their own Yoga Centres.

PEO – 2 : To train them to introduce yoga in Schools, Colleges and Universities.

PEO – 3 : After successful completion of this programme, graduates will able to: Integrate and apply knowledge of yoga and spiritual evolution for the practice of yoga as healthcare therapy.

PEO – 4 : Design advanced yoga based therapies to meet identified needs within economic, environmental and social constraints.

Educational Program Outcomes (POs):

After completion of the program graduates will be able to

- PO- 1 Knowledge of the teachings and philosophy of the yoga tradition, with diverse yogic perspectives on the structure, states, functions, and conditions of the body and the mind in balance (and out of balance), based on teachings of the Yoga Sutras, the Bhagavad Gita, and other relevant texts.
- PO- 2 Ability to teach or deliver the appropriate practices for individuals and/or groups, using multimodal strategies of education such as auditory, visual, and kinaesthetic learning tools, and tools that foster client engagement.
- PO- 3 Advanced knowledge of generally accepted ethical principles of health care and yoga codes of conduct; in depth knowledge of legal and regulatory issues (including current relevant local, state, and national laws).
- PO- 4 Knowledge of the fundamental value of ongoing personal practice, long-term mentorship, and skills maintenance/development through continuing education, including knowledge of

when and how to seek advice and support for case consultation, educational advancement, and personal practice

- PO- 5 Ability to apply knowledge learned in this curriculum to assess the needs of the individuals, to design and implement effective programs, and to assess the effectiveness of these programs.

MAPPING OF PEOs WITH POs

	PO-1	PO-2	PO-3	PO-4	PO-5
PEO-1	X	X	X	X	X
PEO-2	X	X	X	X	X
PEO-3	X	X	X	X	X
PEO-4	X	X	X	X	X

PROGRAM SPECIFIC OUTCOMES (PSO)

The post graduates are able to

PSO 1 Gain knowledge and skills necessary to meet the demand of the growing needs of experts in yoga and related fields.

PSO-2 Eligible to do Research on National & International Level.

PYO18CT101	**FUNDAMENTALS OF YOGA**
	UNIT I: Yoga: Meaning- Definitions-Need- Nature- Aim and Objectives, Principles, Philosophy and Scope of Yoga. Philosophy: Scope of Philosophy, Shad Darshanas: Nyaya, Vaishesika, Samkhya, Yoga, Mimamsa, Vedanta. Misconceptions and clarifications of Yoga- Yoga and Education. **UNIT II:** History of yoga-Modem Developments- Contribution to yoga by Vedas,

	Upanishads, Prasthanatrayes, Tantra, Bhagavad Gita, Yoga Vasishtha, Yoga Sutras, Thimmandiram, Yoga Yajnavalkya Samahitha, Goraksataka, Hatha Yoga Pradipika, GherandaSamhitha, Siva, Samahitha, Hatha Ratnavali, Siddha Siddhanta Paddihati, Narada Bhakthi Sutras, Yoga Rahasya. **UNIT III:** Contributions to yoga by Ramakrishna. Swami Vivekananda, Sivananda, Sn Arobinoda , Maharishi Mahesh yogi, Swami Rama, Krishnamacharya, SwamiKuvalayananda, Ramana Maharishi, Vethathiri Maharishi, Swami Dayanand Saraswathi- sriYogendraji- ParamahamsaYogananda-B.K.S Iyengar. **UNIT IV:** Contributions of yoga to Religions: Hinduism, Jainism, Buddhism, Christianity, Islam, Sufism- Spirituality -Role of yoga & Religions on Spirituality- Methods to promote Spirituality **UNIT V:** Paths of Yoga: Hatha Yoga, Bhakti Yoga, Jnana Yoga, Karma Yoga, Raja Yoga, Mantra Yoga, Laya Yoga, Yantra Yoga, Astanga Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana, Samadhi, Schools of yoga- Sivananda yoga, Integral yoga, Bihar school of yoga, Kundalini yoga, Ashtanga yoga, Viniyoga, Iyengar yoga, Hatha yoga, Swara yoga and Mantra yoga.

COURSE OUTCOME:

- CO1 - Gain knowledge about the Indian philosophy.
- CO2 - Learn about the history of yoga, classical yoga texts, yogic gurus, and contributions of yoga to religions
- CO3 - Understand the various paths of yoga, schools of yoga, and Ashtanga yoga

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	3		1	2	1
CO2	3		2	2	1
CO3	3		2	2	3

1- **Low** **2- Medium** **3- High**

MAPPING (CO's and PSOs)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3

PYO18CT102

ANATOMY AND PHYSIOLOGY

UNIT-1

Tissue cell: Cell structure – group of Tissue – Epithelial tissue, muscular tissue. Connective tissue their functions. The skeletal system – Bones, Joints and

	Muscles of the skeleton – Tendons and ligaments – their functions. **UNIT-2** The circulatory system – structure of the heart – the cardiac cycle – composition of blood – Blood pressure – Blood vessels – Haematological system – their functions – arteries, veins & capillaries. The Digestive system – alimentary canal – mouth – pharynx – oesophagus – stomach – small and large intestine – the peritoneum- Liver – gall bladder – Pancreas – their functions – metabolism – physiology of digestion. The Respiratory system – The respiratory passages – nose, pharynx, larynx, bronchi, lungs, their functions- oxygen consumption. Physiology of Respiration The Endocrine system – Hypothalamus, Pituitary gland – thyroid gland, Parathyroid glands- thymus gland – adrenal gland – Pineal gland – their functions. **UNIT-3** The Nervous system – The central nervous system – autonomic nervous system – atomic nervous system – Brain – spinal cord – Sympathetic and parasympathetic systems – their functions – sensory organs. Skin – eyes – ear – tongue – nose – their functions Posture – active posture - inactive posture – ideal posture – control of posture **UNIT-4** The urinary system – Kidneys, ureters, bladder, urethra, renal function. The reproductive system – puberty – menopause – testes, uterus, ovaries – their functions. **UNIT-5** Impact of yogic practices on the anatomy and physiology of different systems of human body – cells. Bones, joints and muscles, skin. Haematological and immune system, glands, nervous system, body metabolism.

	Special senses, locomotors system.
	COURSE OUTCOMES: • CO1 - Learn about the anatomy of the human body from the cell structure to the major systems of the body • CO2 - Understand the physiology, unique anatomical features, and the functions of the major systems of the body • CO3 - Insight into the effect of yogic practices on each individual systems of the body **MAPPING (CO's and PO's)**

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1				2	3
CO2				2	3
CO3				2	3

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	3
2	2	3
3	2	3

PYO18CT103	METHODS OF YOGIC PRACTICE-I
	Unit 1: Essentials of yogic practices, cleanliness and food, bath, time, sun, closing eyes, place, mirror, breathing, awareness, age limitations, sequence, blanket, clothes, position, emptying the bowels and stomach counter pose, pregnancy, contra-indications, duration, straining, special provisions for women and patients, fitness, posture, side effects. Loosening the joints Joint freeing series Suryanamaskar: Vinyasa Suryanamaskar (kneeling, lunge, jumping) **Unit 2:** Asanas: Tadasana, Trikonasana, ArdhaChandrasana, Utthita Parshvakonasana, Urdhva Dhanurasana, Utkatasana, Moordhasana, Dandasana, Pavanamuktasana, Hamsasana, ArdhaSirsasana, Ardha Kati Chakrasana, Ardhachakrasana, Veerasana, Namaskarasana, Vakrasana, Malasana, Merudandasana, Janusirsasana, Bharadvajasana, Suptavajrasana, Makarasana, ArdhaPadmasana, Sukhasana, Natarajasana, Savasana **Unit 3:** Pranayama: Sectional breathing, Viloma (Surya, Chandra), Anuloma (Surya, Chandra), Pratiloma, Surya Bhedana, Chandra Bhedana **Unit 4:** Kriya: Shankhaprakshalana, LaghooShankhaprakshalana, Agnisar Kriya Bandhas: Jalandhara Banda, Moola Bandha, Uddiyana Bandha Mudras: Chin mudra, Chinmaya mudra,, Adhi mudra, Bhrama mudra, Bairava mudra, Nasiga mudra, Ganesha mudra, Bhudi mudra, varuna mudra, Mukula mudra, Khechari mudra, Tadagi mudra, Shanmuki mudra, **Unit 5**: Meditation: Japa, Soham & pranav Japa, Ajapajapa, antarmouna, Om meditation, Nadanusandhana

COURSE OUTCOMES:

- CO1 - Learn about the essentials of the yogic practices
- CO2 - Exposed to techniques of loosening the joints and Surya Namaskar
- CO3 - Oriented to some of the preliminary asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1		3		2	3
CO2		3		2	3
CO3		3		2	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3

DSE PYO18DE001	YOGA AND HEALTH
	Unit: I Health: Goals of life – adhi and vyadhi, Kleshas, Doshas, factors affecting Health – panchamaha bhudas, stages of development of disease- mental and emotional ill –health – yogic – rules for good health, Dimension of health, causes of ill – health, pillars of health .Role of yogic positive attitudes (maître, karuna, Mudita and Upeksha) for health living, concept of Bhavas and Bhavanas with it's relevance in Health and well –being. **Unit: ll** Communicable diseases: Malaria, Typhoid, Cholera, Whooping cough, Tuberculosis, measles, Venereal diseases, dysentery, Leprosy. **Unit: lll** Life style Diseases and yoga: HBP, diabetes, obesity, cancer, Stoke, Diet and Nutrition. **Unit: lV** Health and environment – mental health – Concepts of health: Air, Water, food clothing, exercise- rules OF health – sanitary laws- Personal hygiene of human systems- population explosion and it's control. **Unit: V**

Yogic rule for good health

Positive yogic principles of health living, ashtanga yoga of patanjali for healthy living, yogic practices for healthy living, relationship of health, fitness, wellness, total – wellbeing and yoga.

COURSE OUTCOMES:

- CO1 - Understand the Indian concept of health, development and causes of disease, mental and emotional well-being, and role of yogic attitudes toward health
- CO2 - In-depth knowledge about communicable diseases
- CO3 - Gain knowledge about the lifestyle diseases, the role of yoga in combating them, and impact of diet and nutrition in disease prevention and curing
- CO4 - Exposure on current trends in health and environment, concepts of hygiene and health, and population explosion and its control
- CO5 - Learn about the yogic principles and practices for health, fitness, and wellness

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	2	1		1	1
CO2			2	2	2
CO3			2	2	2
CO4			1	1	1
CO5		3		3	3

	1 - Low **2- Medium** **3- High** **MAPPING (CO's and PSO's)** Course Outcomes (CO) / Program Specific Outcomes (PSO) 1 | 2 1 | 2 | 2 2 | 1 | 1 3 | 3 | 3 4 | 2 | 3 5 | 3 | 3
PY018AE101	**COMMUNICATION SKILLS** **UNIT – 1** Communication: Meaning, definitions, goals, need, scope – Basic of communication – characteristics of communication- one to one- one to group – Real Communication – Role of Communication in the present scenario. **UNIT – 2** Barriers to Communication – Do`s and Don'ts of Communication skills – Types of Communication. Verbal Communication: Reading listening, writing, speaking skills telephonic Communication, face to face interactions, Non-verbal Communication: Gestures, Body posture, facial expression, eye contact, poise, body movements, and dress. **UNIT – 3** Letter writing – Report writing – Memo`s – Note Making – Agenda preparation

UNIT – 4

Soft skills – Interview skills – preparing for an interview – presentation skills- body language – speaking – pronunciation – voice – Modulation of speech – structure of presentation

UNIT – 5

Group discussion - art of listening and expressing – Role of Yoga on communication skills.

COURSE OUTCOMES:

- CO1 - Understand the basic characteristics of communication and its role in society
- CO2 - Learn about the types of verbal and non-verbal communication
- CO3 - Training on written communication
- CO4 - Orientation on the soft skills to excel in the interview
- CO5 - Learn the skills of group discussion.

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1					
CO2		2			
CO3					
CO4				2	
CO5					2

1 - Low 2- Medium 3- High

	<table><tr><td rowspan="2">Course Outcomes (CO)</td><td colspan="2">Program Specific Outcomes (PSO)</td></tr><tr><td>1</td><td>2</td></tr><tr><td>1</td><td>2</td><td>2</td></tr><tr><td>2</td><td>2</td><td>2</td></tr><tr><td>3</td><td>1</td><td>3</td></tr><tr><td>4</td><td>1</td><td>1</td></tr><tr><td>5</td><td>1</td><td>1</td></tr></table>
PYO18EC101	**VILLAGE PLACEMENT PROGRAMME** Duration : Five days Date : During 1st Year Mode of evaluation : Internal Assessment Maximum Marks : 100 Subject : Yoga Therapy Nature of Program : To teach and train villagers
	COURSE OUTCOMES: • CO1 - Apply knowledge of yogic counselling and case-history taking of participants of the programme • CO2 - Gain competence in practical training and teaching of public members of a village in yogic practices • CO3 - Apply techniques of yogic therapy, alternative medicine, naturopathy, and yogic diet to the common public **MAPPING (CO's and PO's)**

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1		2	2	2	3
CO2		3	2	2	3
CO3		3		3	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	3
2	3	3
3	1	1

PRACTICAL
PYO18CL101

YOGIC PRACTICES-I

UNIT – 1

Loosening the joints

Joint freeing series

Suryanamasakr : Vinyasa Suryanamaskar (Kneeling, Lunge, Jumping)

UNIT – 2

Asanas: Tadasansa, Trikonasana, Ardha Chandrasana, Utthita Parshvakonasana, Urdhava Dhnurasana, Utkatasana, Moordhasana, Dhandasana, Pavanamuktasana, Hamsasana, ArdhaSirasana, Ardha Kati Chakrasana, Ardhachakrasana, Veerasana, Namaskarasana, Vakrasana, Malasana, Merudandasana, Janusirasansa, Bharadvajasana, Suptavajrasana, Makrasana, ArdhaPadmasana, Sukhasana, Natrajasana, Savasana.

UNIT – 3

Pranayama: Sectional breathing, Viloma (Surya, Chandra), Anuloma(Surya, Chandra), Pratiloma, Surya Bhedana, Chandra Bhedana

UNIT – 4

Kriya: Shankhaprakshalana, Laghoo Shankhaprakshalana, Agnisar kriya

Bhandas: Jalandhara Bandha, Moola Bandha, Uddiyana Bandha

Mudras: Chin mudra, Chinmaya mudra, Adhi mudra, Bhrma mudra, Bairava mudra, Nasiga mudra, Ganesha mudra, Bhudi mudra, Varuna mudra, Mukula mudra, Khechari mudra, Tadagi mudra, Shanmuki mudra.

UNIT – 5

Meditation: Japa, Soham & pranava, JapaAjapajapa, Anatarmouna, OM meditation, Nadanusandhana

COURSE OUTCOMES:

- CO1 - Exposed to techniques of loosening the joints and Surya Namaskar
- CO2 - Oriented to some of the preliminary asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1		2		2	3
CO2		2		2	3

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3

Practical PYO18CL102

APPLIED PHYSIOLOGY

UNIT – 1

Measurement of Temperature, Pulse rate, Respiratory rate

UNIT – 2

Measurement of Blood Pressure

UNIT – 3

Sensory functions – Examinations

UNIT – 4

Muscle Examinations

UNIT – 5

Identification of a specimen organ and explain its functions

COURSE OUTCOMES:

- CO1 - Learn about the measurement of physiological variables such as temperature, pulse rate, respiratory rate and blood pressure
- CO2 - Physical examination of sensory function and muscles is learned
- CO3 - Oriented to identify an organ specimen and explain its functions

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1				2	2
CO2				2	2
CO3				2	2

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	3
2	2	3
3	2	3

PYO18CT201

YOGA AND PSYCHOLOGY

UNIT – 1

Psychology: Meaning, definitions, Nature, Need, scope of Psychology –

	Psychology and Yoga, role of Yoga on Heredity and Environment, learning, Emotions**,** memory, Cognition, Intelligence, Attention, Attitude, Personality. **UNIT – 2** Growth and Development: Life span periods, Yoga for different stages of life: infancy, early childhood, later childhood, Adolescence, adulthood, old age, women, Yoga for Professional people. **UNIT – 3** 25 elements, Koshas, Doshas, Gunas, nadis and chakras, Mind, Types of mind, folded, mental faculties, stages, States, sources and powers of mind, unfolding powers of Mind, Yoga for super-consciousness. **UNIT – 4** Spirituality: meaning, definition, Role of Yoga Religion on Spirituality values, type of values, divine virtues. Methods of developing spirituality. **UNIT – 5** Role of Yoga on psychology qualities and psychological disorders Neurosis: Anxiety, Phobias, obsessions, Compulsion, stress, hysteria, Depression, suicide, Eating disorders, Suicide. Psychosis: schizophrenia, Autism, Dementia, Bipolar disorder, Mental retardation Personality disorder: paranoid, Histrionic, drug addicts, gambling, Alcoholism, smoking, anti-social personality disorders.

COURSE OUTCOMES:

- CO1 - Learn about the scope of psychology in yoga and the concept of developmental psychology
- CO2 - Gain an understanding in yogic psychology and spirituality
- CO3 - Understand the impact of yoga on various psychological disorders

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	2	2		2	3
CO2	2	2		3	3
CO3				3	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	2
2	2	2
3	3	3

PYO18CT202

METHODOLOGY OF TEACHING YOGA

Unit I:

Education: Yoga Education, Goal, Scope and importance, Principles of Teaching Yoga- Yogic psychological, Physiological, Pedagogical, sociological. Meaning of methodology of teaching - factors influencing Methodology, Presentation technique. Role of language, Voice, fluency, clarity and body

	language in Teaching. Factors of Yoga Education: Teacher, Student and Teaching- Guru- Shishya Parampara. Types of students and teachers – promotion of leadership qualities. Yogic levels of learning, Vidyarthi, Shishya, mumukshu, yoga Guru **Unit II:** **Methods of Yoga Teaching:** Lecture method, Response to instruction method (method), Individualized Instructional Method, Group discussion Method, Directed Practice Method, Project method, Demonstration Method, Lecture cum Demonstration Method, Imitation Method, Dramatization Method, Sources of teaching methods **Unit III**: **Teaching aids:** Audiovisual aids, Visual aids, Audio aids, Models, Props: Wooden brick and foot rest belt, ropes, slanting plank, chair, stool, bench, box, the heart rate, ladder stool and drum, bolster and pillow, bandage, weight, the horse, big and small. **Unit IV**: **Preparing lesson plan- Essentials of a good lesson plan:** Advantages of preparing a lesson plan, Contents of a lesson plan, Class management-formation of the class, Conducting yoga practical lessons: Precautions and contra-indications of practices. Lesson plan: Assembly and roll call, Relaxation & prayer, Loosening the joints. Introduction of the practice, Demonstration, Individual practice, Group practice. Yoga game (if lime permits), Question and answer session, Relaxation, End prayer. **Unit V**: Organizing yoga class, Yoga camp, workshop in yoga, Yoga tours, Yoga games and competitions, classification of age groups for competitions, Evaluation, Advantages, Devices of evaluation

COURSE OUTCOMES:

- CO1 - Understand the principles and methodology of teaching yoga
- CO2 - Learn about the presentation techniques and teaching aids to yoga learning
- CO3 - Exposed to preparing and executing a lesson plan
- CO4 - Understand the processes in organizing and conducting workshops, camps, games and competition are learned.

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	1	3		3	3
CO2		3			
CO3		2		2	3
CO4				3	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	2
2	3	2
3	3	1
4	3	1

PYO18CT203	**Course Outcomes**
PYO18DE002	**CO1**
	CO2
Generic PYO18GE201	**CO3**
	CO4
Skill enhancement course PYO18SE201	**CO1**
	CO2
Co-curricular PYO18EC201	**CO3**
	CO4
Practical PYO18CL201	**PSYCHOLOGICAL TESTING IN YOGA** 1. Anxiety 2. Assertiveness 3. Study skill 4. Job satisfaction 5. Emotional maturity 6. General mental alertness 7. Attitude 8. Adjustment 9. Division of attention 10. Steadiness 11. Learning 12. Reaction time
	COURSE OUTCOMES: • CO1 - Understand various cognitive and emotional states and gain competency in measuring these variables through different psychological tools **MAPPING (CO's and PO's)**

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1		1	1	3	3

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	3

Practical PYO18CL202

YOGIC PRACTICE -II

Unit 1:

Loosening the joints

Surya Namaskara : for children(10 steps)

Bihar school of yoga Model

Viveka nanda Model

Unit 2:

Asanas: Vrkshasna, parivrirthatrikonasana, virbhadrasana, garudasana, padahastasana, ushatrasana, sirshasana, halasana, sarvangasana, matsyasana, bhujangasana, Salabhasana,Dhunarasana, Navasana,naukasana, siddhasana, siddhayoniasana, ardhamatsyasana, paschimouttanasana, Baddhkonasana, kukutasana, padmasana, vjrasana, siddhasana, savasna

Unit 3:

Pranayama**:** Yogic Breathing, Kapalabhati, Bharmri, Ujjayi, Sheetali, sheetkari, Bhastrika, Nadisodhna

Unit 4:

Kriya: Jalneti, sutraneti

Bandha: Jalandhara Bandha, Moola Bandha, Uddiyana Bandha

Mudra: Chin mudra, chimya mudra, Adi Mudra, Brahma Mudra, Bhirava Mudra, Bhairvi Mudra, shanmukhi Mudra, Vipareetakarni Mudra, Yoga Mudra, Ashwani Mudra, Nasiga mudra

Unit: 5

Meditation**:** Yoga nidra, Rajyoga Meditation, Tratka Memeditation, Chakra Meditation, Nine Centerd meditetion, Preksha Meditetion, Mindfulness Based Strees Reduction technique

COURSE OUTCOMES:

- CO1 - Exposed to techniques of loosening the joints and Surya Namaskar

- CO2 – Oriented to some of the moderate-level to advanced asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	2	1		2	3
CO2	2	1		2	3

1 - Low **2- Medium** **3- High**

	MAPPING (CO's and PSO's) Course Outcomes (CO) / Program Specific Outcomes (PSO) 1 – 3 – 3 2 – 3 – 3 3 – 3 – 3
PYO18CT301	**YOGA THERAPY** **Unit I:** History of yoga therapy- Essence and Principles of Yoga therapy- Physiology and pathology in the yoga- Shatra- koshas- doshas- Granthis - Pancha prana- Application of Yoga and its types- Methodology in Yoga Therapy - Factors (Heyam, Hetu, Hanam and Upayam) - Methods (Darshanam, Sparsanam, Prasnam, Nadi Pariksa) Examination of Vertebra, joints, Muscles, Abdomen and Nervous System and Therapeutic applications - Modification of yogic practices - yogic practices forHuman Systems - Yogic diet **Unit II:** Application of Indian traditional systems of medicine and therapies: Ayurveda - Ashtanga Ayurveda - Doshas, Dinacarya, Ayurvedic diet, Panchakarma therapy - Siddha - Five elements theory, physical constituents, pathology (Kayakalpa, Kitchen, Herbal and other types of medicine) - Naturopathy - Principles of naturopathy - Modalities of Naturopathy - Varmam and Thokkanam, Physiotherapy, Acupressure, Acupuncture, Chromo therapy, Music therapy, Pranic Healing.

	Unit III: Therapeutic application of yoga: High blood pressure, Obesity, Diabetes, Mellitus, Asthma, ulcer, Migraine, Arthritis, Back pain, Thyroid problems, constipation, impotency, infertility, stroke, Epilepsy, Parkinson's disease, sleep disorders. **Unit IV:** Therapeutic application of yoga for psychological disorders: Neurosis: stress, depression, eating disorders - Psychosis: Schizophrenia, autism, Bipolar disorders, dementia - Personality disorders: Paranoid, histrionic, drug addicts- Smoking, Alcoholism, Gambling - Anti-Social Activities **Unit V:** Therapeutic application of yoga for the problems of women- Amenorrhea, Dysmenorrhea, menorrhagia, metrorrhagia, Hypomenorrhoea, oligomenorrhoea, polymenorrhoea, leucorrhoea, uterus related problems, miscarriage, pregnancy- Pre and post natal care, PCOS.
	COURSE OUTCOMES: • CO1 - Gain the ability to visually and physically examine, interview and suggest suitable yogic practices to subjects based on the principles of yoga therapy • CO2 – Understand the concepts of Ayurveda, Siddha, Naturopathy and other allied therapies and their application • CO3 - Ability to frame therapeutic modules of yogic practices for lifestyle disorders, psychological disorders and disorders specific to women

	• **MAPPING (CO's and PO's)** **1 - Low 2- Medium 3- High** **MAPPING (CO's and PSO's)**

Course Outcomes	Programme Outcomes				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1		2		2	3
CO2		1		2	2
CO3		2		2	3

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	3
2	2	2
3	3	3

PYO18CT302	**HATHA YOGA TEXTS** **UNIT-1** Goraksataka, Hatha yoga Pradeepika, Gheranda Samhita, Siva Samhita, Hatha Ratnavali, Siddha Siddhanda Padadi, **UNIT-2** Thirumanthiram, Yoga Yajnavalkya Samhita, Yoga Rahasya, Yoga maharanda, Vini yoga, Light on yoga, Yoga mala. **UNIT-3** Asanas in Hatha Texts,

Definitions, Pre-requisites, special features,

UNIT-4

Pranayama in Hatha Texts, Concept, phases and Stages, Pre –requisites, Benefits, precautions, contraindications

UNIT-5

Kriyas, Bandhas, Mudras, Meditations, & other practices in Hatha Yoga Texts, Concept definitions, precautions, contraindications, stages, benefits.

COURSE OUTCOMES:

- CO1 - Exposed to various Hatha yoga texts, their unique features and their contribution
- CO2 – In-depth study on the asanas, pranayama, mudras, bandhas, and meditation in classical Hatha Yoga texts

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	3	2		2	2
CO2	3	2		2	2

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	2
2	3	3

PYO18CT303

TRADITIONAL SYSTEMS OF MEDICINE & THERAPIES

UNIT-1

Origin of Ayurveda – Aim and importance of Ayurveda , Philosophy and goals of Ayurveda, Unique Approach of Ayurveda – Ayurveda texts, chakra samhita, Sushruta Samhita, Kashyapa Samhita, Rasatantra, Unique features of Ayurveda – Hygienic principles of Ayurveda (Dhinacharya)- Five elements of Ayurveda Doshas, Gunas, Dhatus, Upa Dhatus, Eight Categories or branches of treatment – Nadis vijnana – Nadis and Chakras,- Characteristics of different prakritis- causes of disease- method of disease examination – Ayurveda diet.

UNIT-2

Ayurveda effects of yogic principles & therapies – Ayurvedic purification practices – Panchakarma- vamanam, virechanam, basti, Anuvasana, Nasya, Rakta Moksana- Abhyanga, Swedanam, Nasayam, Njavarakizhi, Pizhichil.

UNIT-3

History and concepts of Siddha medicine: Principles of Siddha Medicine System, Five Elements Theory, Three Biological Humors, Seven Physical Constituents, Pancha Bhudas , Pancha Koshas, Types of Siddha Medicine, Importance of Kayakalpa, Kitchen and herbal medicine, Diet Regulations, Varmam and Thokkanam, Treatment of siddha Medicine for life style diseases.

UNIT-4

Concept of Naturopathy – Principles of Naturopathy – Methods of Naturopathy: Diet, Fasting, Treatment by earth, water treatment, Treatment by rays, Massage.

UNIT-5

Acupuncture, Acupressure, Exercise therapy, Physiotherapy, Music therapy, Color therapy, Magneto Therapy, Reiki.

COURSE OUTCOMES:

- CO1 - Understand the principles and philosophy of important Ayurveda texts
- CO2 - Gain knowledge about the Ayurvedic purification practices and Ayurvedic diet
- CO3 – Understand the principles of Siddha medicine and treatment for lifestyle disorders
- CO4 - Various alternative therapies and nature cure treatment approaches are learned

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1				2	2
CO2				2	2
CO3				2	2
CO4				2	3

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	1
2	1	1
3	1	1
4	2	3

Discipline Specific Elective PYO18DE005

METHODS OF NATUROPATHY

Unit I:

Meaning - Definitions - Scope - Principles and Philosophy of Naturopathy- Modalities of Naturopathy: Diet therapy, fasting therapy, mud therapy, hydro therapy, colon hydrotherapy, Massage therapy, air therapy, chromo therapy, Magento therapy, Sun rays

Unit II:

Mud therapy: Mud pack, Chest pack, Mud Bath, Mud pack for face, Knee mud pack, Wet-sheet pack for the whole body, Banana leaf bath

Unit III:

Hydro therapy: Enema, Hip Bath, alternative hip bath, Sitz Bath, Spinal Bath, Spinal spray bath, Foot and arm bath, Hot foot bath, Arm bath.

Unit IV:

Steam bath, Sauna bath, Sponge bath, immersion bath, Friction bath, Under water massage, Wet sheet pack, chest pack, knee pack, Local steam, steam inhalation, Jet spray massages, Color Hydrotherapy, Whirlpool bath.

Unit V:

Naturopathy Diet (Eliminative, soothing, constructive), Fasting, Sunbath, Air bath, massage.

COURSE OUTCOMES:

- CO1 - Gain an understanding of the principles, philosophy and modalities of naturopathy

- CO2 – Learn about the therapeutic naturopathy treatments such as mud therapy, hydrotherapy, steam bath and diet and their application for common disorders

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1				2	2
CO2				2	2

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	2
2	2	3

Generic

PYO18GE301

STRESS MANAGEMENT

Unit I:

Meaning , Concepts, levels, types, reaction, causes, symptoms, complications, remedies, stress and yoga

Unit II:

Sources of stress: internal and external, release of stress

Unit III:

Texts on stress, Kleshas and stress, Stress and koshas

Unit IV:

Effective stress management- Diet, yogic practices- systems of medicine and therapies

Unit V:

Frustration, conflicts and psychosomatic disorders, relationship between body and mind, mental health.

COURSE OUTCOMES:

- CO1 - Understand the concepts, types and remedies of stress
- CO2 – Learn about the yogic approach to stress management
- CO3 - Gain an insight on the impact of stress management on psychosomatic disorders and mental health

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	1		1	3	3
CO2				3	3
CO3		2		3	3

1 - Low **2- Medium** **3- High**

	MAPPING (CO's and PSO's) Course Outcomes (CO) / Program Specific Outcomes (PSO) 1 | 2 | 3 2 | 2 | 3 3 | 2 | 3
Ability enhancement compulsory course **PYO18AE301**	**PERSONALITY DEVELOPMENT** **Unit-1** Personality: Personality in psychology – Meaning, Definition, concept, need, nature and scope of personality development- structure of personality. **Unit-2** Stage of human development- determinants of human development of personality- developmental processes: physical, mental, moral, social, emotional and spiritual. **Unit-3** Guidelines on personality – values and spirituality- developing good personality based on yoga- anger and stress management- role of diet on personality. **Unit-4** Personality development with special emphasis on pancha kosha- Ashtanga yoga- Factors of personality- Theories of personality- Attitude- Self-esteem, -Memory-Concentration-creativity-intelligence- Assessment of personality. **Unit-5** Leadership- Qualities of leaders- Positive thinking- powers and effects of

thoughts- career planning– career rules- Better human relations- time management.

COURSE OUTCOMES:

- CO1 - Learn about the concepts and developmental processes of personality
- CO2 - Understand the role of yoga, diet and stress management in developing the personality.
- CO3 - Gain insight into the development of leadership qualities and career development

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1				3	3
CO2				3	3
CO3				3	

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	1
2	2	2
3	2	1

Co-curricular PYO18EC301	**INTERNSHIP** **(HOSPITALS OR HEALTH CENTERS OR YOGA OR NATUROPATHY CENTRES)** Internship will be organized for 15 days. The assessment of the students is internal for 100 marks. Students should design programme in yoga and are to practice and train in Hospitals or Yoga or Naturopathy Centres for 15 days.

COURSE OUTCOMES:

- CO1 - Experience in designing yogic programmes for various age groups and people with disorders
- CO2 – Practical teaching of yogic practices based on the needs and requirement of the subjects

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1		3		3	3
CO2		3		3	3

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

	Course Outcomes (CO)	Program Specific Outcomes (PSO)	
		1	2
	1	3	3
	2	3	3

PRACTICAL PYO18CL301

YOGIC PRACTICES-III

Unit-1:

Loosening the joints

Pawanmuktasana series

Suryanamaskar: Sivananda Model, Chandranamaskar

Unit-2:

Asanas**:** Virabhadrasana, Parsavottanasana, UthithaTrikonasana, AdhomukaSavasana, Karnapidasana, Kandharasana, Titibhasana, Padma Sarvankasana, Salamba Sirasasana, gomukasana, Setubandhasana, Chakrasana, Trianga Mukhaipada paschimottanasana, Marichyasana, Virasana, Svastikasana, Shashangasana, Garudasana, Mayurasana, Padma Mayurasana, Bhadrasana, Simhasana, AkarnaDhanurasana, Parsvakonasana, Savasana.

Unit-3:

Pranayama**:** Moorchapranayama, Anulomaviloma, Sadanta Pranayama, Pranayama with Kumbhaka and bhandhas

Kriya**:** Dhanda dhauti, Vatsara dhauti, Nauli (Madhyama, Vama, Dakshina)

Unit-4

Mudras: Yoni Mudra, Lotus Mudra, Dhyani Mudra, Sakthi Mudra, Shambavi Mudra, Pashinee Mudra, MahaBheda Mudra, Ksepana Mudra.

Unit-5

Meditation : DRT, Walking Meditation, Vipasana Meditation, Nine centered

Meditation, Yogic Sukshmavyama, Sudharsiya, Zen Meditation, Savitakidhyan Dharana, Mind sound Resonance Technique.

COURSE OUTCOMES:

- CO1 – Learn the methods of loosening the joints and types of suryanamaskar
- CO2 – Learn techniques of some of the moderate-to advanced level asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	2	2		3	2
CO2	2	2		3	2

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3

Practicals PYO18CL302

CLINICAL APPLICATIONS IN YOGA THERAPY

Unit :l

Vyuham in yoga therapy: Heyam or the symptoms, Countering

	predisposing factors, Hetu or the cause, Aggravating factors, Hanam or the remedy, Relieving factors, Upayam or the tools, Importance of regular reviews. **Pariksa in yoga therapy:** In depth study of the diagnostic tools, Darsanam, Sparsanam, Prasanam, Neetakanta Model; The idel teacher student relationship **Nadi pariksa in yoga Therapy:** Group classes vs. Individual classes, Nadi system- Definition from texts, The diffcrent of nadi pariksa in yoga therapy, Methodology of nadi pariksa in yoga therapy, Differences between Nadi pariksa and pulse reading **Unit: II** **Application of Yoga Therapy** **Extensive theoretical and practical learning about these diagnostic tools.** **Specially with respect to:** ➢ The pre requisites for using these tools. ➢ The exact technique of using these tools ➢ The limitations of these tools ➢ The principles involved in inferring information by using these tools ➢ Application of these tools during therapeutic intervention. **Modification an applied to Therapy** ➢ Modification vs adaptation ➢ Simplification vs intensification ➢ From vs function ➢ Modification of asana

	➢ Modification of meditation ➢ Modification of chanting. **Unit: lll** **Therapeutic application of yoga in skeleton- muscular system** ➢ Low back pain ➢ Cervical spondylosis ➢ Spondylosis ➢ Ankyilosing spondilosis ➢ Osteoarthritis ➢ Rheumatoid arthritis. **Unit: IV** **Therapeutic application of yoga of in digestive system** ➢ Gastritis ➢ Peptic ulcer disease ➢ Hernia ➢ Constipation **Therapeutic application of yoga of in Respiratory system** ➢ Allergic sinusitis ➢ Asthma ➢ COPD **The Therapeutic application of yoga in cardiovascular system**

	➢ Hypertension ➢ Circulatory insufficiency ➢ Varicose veins **Unit: V** **The Therapeutic application of yoga in Nervous, Endocrine, Urinary, Lymphatic, Reproductive system and sensory Conditions.** ➢ Migraine ➢ Epilepsy and stokes ➢ Hypo and Hyperthyroidism ➢ Irregular periods ➢ Pregnancy – pre & post natal care ➢ Urinary insufficiency ➢ Lymphatic Edema ➢ Refractive errors in the eyes.
	COURSE OUTCOMES: • CO1 - Gain knowledge about the causes, symptoms, and predisposing factors of various diseases • CO2 - Learn about the principles and application of various diagnostic and therapeutic tools of yoga therapy • C03 - Understand the methodology and application of nadi pariksha for therapeutic intervention • CO4 - Learn techniques of modifying asanas, pranayama, meditation and

chanting in therapeutic intervention

- CO5 - Study the application of therapeutic yogic modules for disorders of the major systems of the body

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	1	2		2	3
CO2				2	3
CO3		1		2	3
CO4		2		3	3
CO5	2	2		2	3

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	3
2	3	3
3	2	3
4	3	3
5	3	3

1-Low **2- Medium** **3- High**

PYO18CT401	RESEARCH PROCESS IN YOGA

Unit-1:

Research –Meaning, Definitions, Need, Nature and scope of research in yoga, Types of research- Basic-Applied-Action – Qualities of a researcher-Criteria in locating and selecting a research problem- preparation of research proposal Mechanism of research proposal- formulation of hypothesis-variables and its types.

Unit-2:

Types of research design –Describe research –survey method, case study, method, Experimental Method- Categories: Longitudinal design, Quasi Experimental design, cross sectional design, Double blind placebo design, Experimental Design Types: Single group Design Reverse group design, Repeated measure design static group comparison design, Rotated group design, Random group design, Equated group design, Factorial design.

Unit-3:

Data- Population- Sample-Subject- Sampling: Characteristics, Principles, steps, Determining the sample size, criteria in selection, Types of sampling probability sampling methods- Random and complex, Non –Probability Sampling methods- Writing Synopsis and Research report-Front Materials, Main Chapters and Back materials- Recent trends in yoga research, yoga research centres and their works in India.

Unit-4:

Statistics: Meaning- Need and importance in research – non-parametric statistics- Treatment of F-test, ‘t’ test one way- two way – testing- chi square- statistical packages- SPSS-SAS- data process, data analysis-Graphical Representation, Data interpretation.

Unit-5:

Types of Statistics- Parametric and non-parametric-Normality of data-Normal Curve – Data Analysis-'t' Test, F-test Type I Type II error- ANOVA-ANCOVA, (one way & two way)- Post hoc test- Pearson product moment correlation-Partial and Multiple Correlation- Regression simple linear and multiple linear-Post hoc tests.

COURSE OUTCOMES:

- CO1 - Understand the nature and scope of research in yoga, various research methods and design, and areas of research
- CO2 – Learn to prepare a research proposal, formulate hypothesis, and implement research design and sampling
- C03 - Learn to write research report and synopsis
- CO4 - Gain practical competency in statistical concepts related to experimental research

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1		1			
CO2					
CO3			2	3	
CO4				3	3

1 - Low **2- Medium** **3- High**

	MAPPING (CO's and PSO's) Course Outcomes (CO) / Program Specific Outcomes (PSO) 1 | 2 1 | 2 | 3 2 | 2 | 3 3 | 1 | 3 4 | 1 | 3
PYO18CT402	**YOGA SUTRAS** **Unit : l** Basics and date of the yoga sutra –Raja yoga – notable commentaries- Ashtanga yoga; Yoga- mind – psychic powers. 1) Samadhi pada 2) Sadhana pada 3) Vibhuti pada 4) Kaivalyabpada **Unit: ll** 1:1-2, 1:5 to 7, 1:12, 1:17 to 18, 1:30 to 51. **Unit: lll** 2:1 to 11, 1:23 to 24, 2:28 to 55. **Unit: lV** 3: 1 to 9, 3:25 to 38, 3:41, 3:56. **Unit :V** 4:1, 4:7, 4:19, 4:34.

COURSE OUTCOMES:

- CO1 - Understand the philosophy, principles, concepts and commentaries of Yoga Sutra
- CO2 - In-depth study of Samadhi Pada, Sadhana Pada, Vibhuti Pada and Kaivalya Pada.

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	2	1		2	
CO2	2	1		2	

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	1
2	3	1

PYO18CT403

THESIS

1) To acquire practical knowledge.
2) To acquire skill in the administration of yoga practices in the real life.
3) To identify some common problems found among people.
4) To do a systematic investigation into such problems.
5) To suggest remedial measures to make life more meaningful and

purposeful.

6) To learn the clinical method, case history writing, measurement of clinical symptoms, psychological parameters. Application of statistics on the initial and final dada recorded.

COURSE OUTCOMES:

- CO1 - Acquire practical skills in a systematic investigation of a research problem
- CO2 - Organize the samples and sampling techniques which is relevant to the study
- CO3 – Apply the statistics in research thesis for evaluation
- CO4 – Learn measurement of clinical symptoms and psychological parameters
- CO5 – Organizing the data and presenting it as a thesis

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1					
CO2					
CO3			1	2	
CO4				3	
CO5				2	

1 - Low **2- Medium** **3- High**

	MAPPING (CO's and PSO's) Course Outcomes (CO) / Program Specific Outcomes (PSO) 1 | 1 | 3 2 | 1 | 3 3 | 1 | 3 4 | 2 | 3 5 | 1 | 3
PRACTICAL PYO18CL401	**YOGA PRACTICES – IV** **Unit : l** Loosening the joints. Pavanmuktasana series. Suryanamaskar : kriya Suryanamaskar , Advance Suryanamaskar, **Unit: ll** Asanas: Ardha baddha padmottaanasana. Utthita Hasta Padangusthasana. Vatayanasana. Hanumasana. Padangushthasana. Padma Sarvangasana, kama Pidasana, Vrischikasana , poorna Bhujangasana, poorna salabhasana, poorna Dhanurasana, poorna matsyendrasana, Eak pada Sirsasana, Koormasana, Padma Sirshasana, Ardha Baddha Pachimottanasana, Paryangasana, Bhekasana, Baddha Padmasana, Vamadevasana, Parivritti Janusirshasana, Savasana. **Unit: lll** **Pranayama:** Kewali Pranayama (Soham), Plawini Pranayama, Kumbhaka and Bandhas with ratios. **Unit: lV** Kriyas**:** Ghrta Neti, Dugdha Neti, Basti (Enema)

Bandhas: Maha Bandha.

Mudras**:** Kaki Mudra, Bhujangini Mudra, Vipareeta Karani Mudra, Kundalini Mudra, Mahavedha Mudra, Vajroli/Sahajili Mudra, Manduki Mudra, Ashwini Mudra.

Unit :V

Meditation: Transcendental, Cyclic (S- vyasa), Guided Meditation, Dynamic Meditation, Tibetan Meditation.

COURSE OUTCOMES:

- CO1 - Learn about the essentials of the yogic practices
- CO2 - Exposed to techniques of loosening the joints and advanced Surya Namaskar
- CO3 - Oriented to some of the advanced level of asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1	2	3		3	2
CO2	2	3		3	2
CO3	3	3		3	2

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3

1 - Low **2- Medium** **3- High**

PRACTICAL

PTO18CL402

CLINICAL APPLICATIONS IN TRADITIONAL SYSTEMS OF MEDICINES AND THERAPIES

UNIT-1

Methodology in yoga therapy- Factors (Heyam, Hatu, Hanam and Upayam), Methods (Darshanam, Sparsanam, Prasnam and Nadipariksa) Examination of Vertebra, Joints, muscles, Abdomen and Nervous System and therapeutic yoga practices- Modification of Yogic practices.

UNIT-2

Application of traditional Indian medical systems and therapies: Ayurveda- Doshas, Dinacharya , Ayurvedic Diet, panchakarma therapy, Siddha – Five elements theory, Physical constituents pathology (Kayakalpa, kitchen herbal and other types of medicine) Varmam and Thokkanam: Exercise therapy Music therapy, Pranic Healing, Magneto therapy, Naturopathy and Modalities of Naturopathy. Reflexology.

UNIT-3

Therapeutic Applications for High Blood Pressure, Obesity, Diabetes, Mellitus, Asthma, Sinusitis, Migraine, Arthritis, Back pain, Thyroid problems, Constipation, Impotency, Stroke, Epilepsy, Parkinson's disease, Sleep disorders, skin diseases, insomnia, Anaemia.

UNIT-4

Therapeutic applications for psychological disorders:

Neurosis: Stress, Depression, autism, eating disorders,
Psychosis: Schizophrenia, autism, bipolar disorders, dementia
Personality Disorders: Paranoid, histrionic, drug addicts-Smoking, Alcoholism, Gambling-Anti-social activities.

UNIT-5

Therapeutic applications for the problems of women- Amenorrhea, Dysmenorrhea, Menorrhagia, Hypomenorrhoea, Olimenorrhoea, Polymenorrhoea, Leucorrhea, uterus related problems, miscarriage, pregnancy-pre and post natal care, PCOS.

COURSE OUTCOMES:

- CO1 - Develop the ability to visually and physically examine, interview and perform nadi pariksha of the subjects
- CO2 - Gain knowledge about the concepts and principles of yoga therapy, Ayurveda, and siddha, naturopathy, acupuncture, acupressure, and physiotherapy
- CO3 - Understand the treatment modalities in yoga therapy, Ayurveda, and siddha for life-style disorders, psychological disorders, and disorders specific to women

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	PO2	PO3	PO4	PO5
CO1				3	3
CO2	1	1		2	3
CO3		2		2	3

1 - Low **2- Medium** **3- High**

	MAPPING (CO's and PSO's) Course Outcomes (CO) / Program Specific Outcomes (PSO) 1 | 3 | 3 2 | 2 | 1 3 | 3 | 3
Discipline Specific Elective **PYO18DE008**	**STATISTICS IN YOGA** **UNIT-I** Statistics- Basic Concept- Need and Importance of Statistics; Data- Raw and Grouped, Types of data; Concept And Calculations of Measures of Central Tendency-Mean, Median And Mode; Measures of Variability- Range, Mean Deviation, Quartile Deviation And Standard Deviation. **UNIT-II** Introduction To Normal Distribution - Normal Curve - Characteristics of Normal Curve - Properties of Normal Curve - Standard Normal Curve - Problem Based On Normal Distribution - Uses of Normal Distribution. **UNIT-III** Testing Of Hypothesis - Procedure, Types of Hypothesis, Level of Significance, One Tailed and Two Tailed Test, Degrees of Freedom; Test of Significance for Difference of Means- t Test -Independence and Dependence Test, Z-Test ; One Way Analysis of Variance. **UNIT-IV** Correlation- Pearson Product Moment Correlation, Spearman Rank Order Correlation, Phi Correlation, Biserial Correlation, Partial and Multiple Correlation **UNIT-V** Non Parametric: Chi Square Test - Equal Occurrence Test, Independence of Attributes, Contingency Coefficient; Graphical Representation - Line Diagram,

	Bar Diagram- Multiple Bar Diagram, Pie Diagram.
	COURSE OUTCOMES: • CO1 - Learn about the types of data and the measures of central tendency and variability • CO2 - Understand normal distribution and testing of hypothesis through T test, ANOVA, correlation, and non-parametric tests • CO3 - Gain ability to present data through graphical representations **MAPPING (CO's and PO's)**

Course Outcomes	**Programme Outcomes**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1				2	
CO2				2	
CO3				2	2

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	3
2	1	3
3	1	3

1 - Low
2- Medium
3- High

Skill-enhancement course **PYO18SE401**	**ENVIRONMENTAL STUDIES** **Unit: l**

	Definition - Scope and importance- need for public awareness. **Unit: ll** Resources – Water – Forest – Minerals- Food Energy- land. **Unit: lll** Environmental pollution- definition – causes- Effects and control measure of Air pollution – Water- Soil-Noise- Nuclear. **Unit: lV** Social issues and the environment- Urban problems related to energy – Water conservation – Rainwater harvesting- Water shed management- Environment ethics- Climate change – Global warning – Acid rain – Ozone layer deletion. **Unit: V** Human Population and the Environment – population growth variation among Nation population explosion – Family welfare program- Environment – and human wealth.
	COURSE OUTCOMES: • CO1 - Raises awareness about the environment, natural resources and social issues that affect environment • CO2 - Learn about the causes and effects of environmental pollution and

means to control it

- CO3 - Understand the impact of various social issues and population growth on the environment

MAPPING (CO's and PO's)

Course Outcomes	Programme Outcomes				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1			2	2	
CO2			2	2	
CO3			2	2	

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	1
2	1	2
3	2	2

TAMIL NADU PHYSICAL EDUCATION AND SPORTS UNIVERSITY

MELAKKOTTAIYUR POST CHENNAI - 600 127

DEPARTMENT OF YOGA

M.Sc., YOGA THERAPY

(Two years Regular Programme)

CHOICE BASED CREDIT SYSTEM (CBCS)

Programme Educational Objectives (PEO)

- PEO-1 Graduate will have successful academic and research career.
- PEO-2 Graduates will have employment in public and private sectors and resolve health, economic, social and environmental issues.

PROGRAM EDUCATIONAL OBJECTIVES (POs)

PO – 1: Knowledge of classical and theoretical foundations of the field of Yoga Therapy

PO – 2: Knowledge of classical theories of health and disease relevant to the practice of Yoga Therapy

PO – 3: Knowledge of human anatomy, physiology and biomechanics, and the interrelationships between systems of the body

PO – 4: Knowledge of common pathologies and disorders of systems of the body, including familiarity with symptoms, condition management, illness trajectories, and related contraindications to yoga practices

PO – 5: Ability to communicate using common medical and psychological terminology,

PEO – 6: Knowledge of models of human development, with the influence of familial, social, religious and cultural conditioning on health and healing

PO – 7: Knowledge of the interconnections between the body, the breath, the mind, and the emotions in the context of maintaining resilience and well-being

PO – 8: Ability to communicate effectively, to establish healthy therapeutic and professional relationships, and to implement effective teaching methods by adapting to unique styles of learning, providing supportive and effective feedback while evaluating and acknowledging the progress of the client

PO – 9: The skill to conduct an intake and assessment of the client and elicit the priorities and goals of the client; to integrate information from the intake, evaluation, and observation to develop a working assessment of the client's condition, limitations, and possibilities;

PO – 10: The skill to determine which aspects of the client’s conditions, goals, and aspirations might be addressed through Yoga Therapy

PO – 11: Advanced knowledge of diverse Yoga Therapy tools and practices and their appropriate application, with practices that may include asana or postures, pranayama (or regulated breathing) meditation and relaxation techniques, and lifestyle modifications, including basic yogic dietary concepts; and the knowledge of when to apply these practices and when they are contraindicated

PO – 12: Critical thinking skills and science-based literacy to advance the evolution of Yoga Therapy as an integrative health practice

PO – 13: Integrate and apply knowledge of yoga and spiritual evolution for the practice of yoga as healthcare therapy.

PO – 14: Install the intellectual skills to analyze and solve healthcare disorders through designing specific yoga therapies.

MAPPING OF PEOs WITH POs

	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO-8	PO -9	PO - 10	PO-11	PO-12	PO - 13	PO - 14
PEO -1	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PEO -2		X	X	X		X		X	X	X	X		X	X

The post graduates are able to

PSO 1 Gain knowledge and skills necessary to meet the demand for Yoga Therapy Instructors as paramedical personal in hospitals and nursing homes under the guidance of doctors, and to equip the students to work as therapists at Naturopathy hospitals, health clubs, etc.

PSO-2 Eligible to do Research on National & International Level.

PYT18CT101	**FUNDAMENTALS OF YOGA THERAPY**
	UNIT-1 Therapy: Meaning – Classification-Benefits – Paths of Yoga Therapy – Goal – Principles – Essence – Nature of Yoga Therapy. **UNIT-2**

	Origin of Yoga Therapy – History of Yoga Therapy – Evolution of Yoga Therapy – Foundation of Yoga Therapy. **UNIT-3** Health: Goal of Life – Adhi and Vyadhi – Klesha – Factors affecting health – Stages of development of disease – Yogic rules for good health – Dimension of Health – Causes of ill – health – Pillars of heath. Ailments – Pillars of Yoga Therapy – How the Therapy works – Yogic practices and health – How Yogic practices heal. **UNIT-4** Fitness: Meaning, Components and Scope of Fitness – Metabolic Fitness – Role of yoga on Fitness. Wellness: Meaning & Scope – Components – Yogic Management **UNIT-5** Nutrition – Nutrients – Types of diet – Good and Bad diets – Sattvic diet. Relationship of health, Fitness, Wellness, Nutrition and Yoga.
	COURSE OUTCOME: • CO1 - Gain knowledge about the goals, principles and philosophy of yoga therapy. • CO2 - Learn about the history, evolution and foundations of yoga therapy • CO3 – Understand the meaning, definitions, dimensions, and scope of health, fitness and wellness • CO4 – Insight into the causes of illness and the management of those ill-health through yoga • CO5 – Gain knowledge about the nutrition, components of nutrition and their impact on health. Also the principles and characteristics of the yogic diet are expounded

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1	3					1						2		
CO2	3	2				2	2					1	1	
CO3			1	2	1	1	2		3	3	2			
CO4		3	2	3	1				3	3	3			
CO5		1				1								

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	2
2	3	1
3	3	3
4	3	3
5	3	2

1-
2-

1 - Low **2- Medium** **3- High**

PYT18CT102

FUNCTIONAL ANATOMY AND PHYSIOLOGY

UNIT-1

Tissue cell: Cell structure – group of Tissue – Epithelial tissue, muscular tissue. Connective tissue their functions. The skeletal system – Bones, Joints and Muscles of the skeleton – Tendons and ligaments – their functions.

UNIT-2

The circulatory system – structure of the heart – the cardiac cycle – composition of blood – Blood pressure – Blood vessels – Haematological system – their functions – arteries, veins & capillaries. The Digestive system – alimentary canal – mouth – pharynx – oesophagus – stomach – small and large intestine – the peritoneum- Liver – gall bladder

	– Pancreas – their functions – metabolism – physiology of digestion. The Respiratory system – The respiratory passages – nose, pharynx, larynx, bronchi, lungs, their functions- oxygen consumption, Physiology of Respiration. The Endocrine system – Hypothalamus, Pituitary gland – thyroid gland, Parathyroid glands- thymus gland – adrenal gland – Pineal gland – their functions. **UNIT-3** The Nervous system – The central nervous system – autonomic nervous system – atomic nervous system – Brain – spinal cord – Sympathetic and parasympathetic systems – their functions – sensory organs. Skin – eyes – ear – tongue – nose – their functions Posture – active posture - inactive posture – ideal posture – control of posture **UNIT-4** The urinary system – Kidneys, ureters, bladder, urethra, renal function. The reproductive system – puberty – menopause – testes, uterus, ovaries – their functions. **UNIT-5** Impact of yogic practices on the anatomy and physiology of different systems of human body – cells. Bones, joints and muscles, skin. Haematological and immune system, glands, nervous system, body metabolism. Special senses, locomotors system.

COURSE OUTCOMES:

- CO1 - Learn about the anatomy of the human body from the cell structure to the major systems of the body
- CO2 - Understand the physiology, unique anatomical features, and the functions of the major systems of the body
- CO3 - Insight into the effect of yogic practices on each individual systems of the body

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1			3						1	2	2	1	1	
CO2			3						2	1		1	1	
CO3		2	3	3						3		2	1	

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3

PYT18CT103 **BASIC PRINCIPLES OF YOGA THERAPY**

UNIT-1 – Principles of ViniYoga

- Definition of ViniYoga
- Srsti Karma
- Siksana Krama

	➢ Rakshana Krama ➢ Cikitsa mode of application **UNIT-2** – Fundamental Principles of Yoga therapy ➢ Definition of cikitsa ➢ Medical System vs Health Management ➢ Its exact role in health management ➢ The focus of cikitsa ➢ Relationship ➢ Acharya **UNIT-3 –** Basic Concepts of Yoga therapy ➢ Physiology and Pathology in the Yoga – Shastra ➢ Ahimsa ➢ Union ➢ Work with the mind ➢ Important of breath ➢ Body – the power tool ➢ Technique vs effect **Unit-4 –** Progression and Individual focus in Yoga therapy ➢ Starting Point ➢ Fixing the goal ➢ Progression ➢ Coming out of practice ➢ Yogam and Ksemam ➢ Kala, desa, vaya, vrtti, sakti ➢ The nature of ailment

- Isvarapranidhana

UNIT-5 – Basic principle of other alternative medical systems

- Physiology and Pathology of Ayurveda
- Ayurveda – fundamental principles, Panca Mahabhuta & Tridosa.
- Ahara niyma; Dietary principles and guidelines for health
- Assement of Ayurvedic Constitution
- Dinacharya
- Siddha, Acupressure, Pranic healing, Naturopathy, Yogic diet, Physiotherapy, Massage, Acupuncture, Color therapy, Magneto therapy, Hydro therapy, Fasting therapy.

COURSE OUTCOMES:

- CO1 - Gain an insight into viniyoga and its application for people of different life-stages
- CO2 - Understand and develop an ability to apply principles and concepts of yoga cikitsa in health management
- CO3 - Develop the ability to frame course planning and progression
- CO4 - Gain knowledge about the concepts and principles of Ayurveda, siddha, naturopathy, acupuncture, acupressure, physiotherapy and other alternative medical systems

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1									2	2	2			1
CO2				1					3	3	3			2
CO3				2						3	3	3	1	3
CO4			1	2	1	2			2					

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	2
2	3	3
3	3	3
4	3	2

DSE

PYT18DE001

HEALTH AND YOGA THERAPY

Unit: I

Health: Goals of life – adhi and vyadhi, Kleshas, Doshas, factors affecting Health – panchamabhudas, stages of development of disease- mental and emotional ill –health – yogic – rules for good health, Dimension of health, causes of ill – health, pillars of health .Role of yogic positive attitudes (maître, karuna, Mudita and Upeksha) for health living, concept of Bhavas and Bhavanas with it's relevance in Health and well –being.

Unit: ll

Communicable diseases: Malaria, Typhoid, Cholera, Whooping cough, Tuberculosis, measles, Venereal diseases, dysentery, Leprosy.

Unit: lll

Life style Diseases and yoga: HBP, diabetes, obesity, cancer, Stoke, Diet and Nutrition.

Unit: lV

Health and environment – mental health – Concepts of health: Air, Water, food clothing, exercise- rules OF health – sanitary laws- Personal hygiene of human systems- population explosion and it's control.

Unit: V

Yogic rule for good health

Positive yogic principles of health living, ashtanga yoga of patanjali for healthy living, yogic practices for healthy living, relationship of health, fitness, wellness, total – wellbeing and yoga.

COURSE OUTCOMES:

- CO1 - Understand the Indian concept of health, development and causes of disease, mental and emotional well-being, and role of yogic attitudes toward health

- CO2 - In-depth knowledge about communicable diseases

- CO3 - Gain knowledge about the lifestyle diseases, the role of yoga in combating them, and impact of diet and nutrition in disease prevention and curing

- CO4 - Exposure on current trends in health and environment, concepts of hygiene and health, and population explosion and its control

- CO5 - Learn about the yogic principles and practices for health, fitness, and wellness

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1		3		2	1		3			1		2	2	2
CO2				3		2	1			1		1	2	1
CO3				2		2	1			3		2	2	2
CO4		2		2	1	2	1					1	1	1
CO5	1	2		2	1	1				2		3	2	2

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

	Course Outcomes (CO)	Program Specific Outcomes (PSO)	
		1	2
	1	3	2
	2	2	1
	3	3	3
	4	2	1
	5	3	3

PYT18AE101

COMMUNICATION SKILLS

UNIT – 1

Communication: Meaning, definitions, goals, need, scope – Basic of communication – characteristics of communication- one to one- one to group – Real Communication – Role of Communication in the present scenario.

UNIT – 2

Barriers to Communication – Do`s and Don’ts of Communication skills – Types of Communication.

Verbal Communication: Reading listening, writing, speaking skills telephonic Communication, face to face interactions, Non-verbal Communication: Gestures, Body posture, facial expression, eye contact, poise, body movements, and dress.

UNIT – 3

Letter writing – Report writing – Memo`s – Note Making – Agenda preparation

UNIT – 4

Soft skills – Interview skills – preparing for an interview – presentation skills- body language – speaking – pronunciation – voice – Modulation of speech – structure of presentation

UNIT – 5

Group discussion - art of listening and expressing – Role of Yoga on communication skills.

COURSE OUTCOMES:

- CO1 - Understand the basic characteristics of communication and its role in society
- CO2 - Learn about the types of verbal and non-verbal communication
- CO3 - Training on written communication
- CO4 - Orientation on the soft skills to excel in the interview
- CO5 - Learn the skills of group discussion.

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1					1			3						
CO2					1			3	2					
CO3								1						
CO4					1			2	1					
CO5					1			1	1					

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2

1	1	1
2	2	2
3	1	3
4	1	1
5	1	1

PYT18EC101 **VILLAGE PLACEMENT PROGRAMME**

Duration : Five days

Date : During 1st Year

Mode of evaluation : Internal Assessment

Maximum Marks : 100

Subject : Yoga Therapy

Nature of Program : To teach and train villagers

COURSE OUTCOMES:

- CO1 - Apply knowledge of yogic counselling and case-history taking of participants of the programme
- CO2 - Gain competence in practical training and teaching of public members of a village in yogic practices
- CO3 - Apply techniques of yogic therapy, alternative medicine, naturopathy, and yogic diet to the common public

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1					1			2	3	3	1	1	2	3
CO2			2		1			2	1	3	1	1	2	3
CO3			3	3	1				1	3	1	1	2	3

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3

PRACTICAL

PYT18CL101

YOGIC PRACTICES AND MODIFICATIONS -I

UNIT – 1

Loosening the joints

Joint freeing series

Suryanamasakr : Vinyasa Suryanamaskar (Kneeling, Lunge, Jumping)

UNIT – 2

Tadasansa, Trikonasana, ArdhaChandrasana, UtthitaParshvakonasana, UrdhavaDhnurasana, Utkatasana, Moordhasana, Dhandasana, Pavanamuktasana, Hamsasana, ArdhaSirasana, Ardha Kati Chakrasana, Ardhachakrasana, Veerasana, Namaskarasana, Vakrasana, Malasana, Merudandasana, Janusirasansa, Bharadvajasana, Suptavajrasana, Makrasana, ArdhaPadmasana, Sukhasana, Natrajasana, Savasana.

UNIT – 3 Pranayama: Sectional brathing

Viloma (Surya, Chandra)

Anuloma(Surya, Chandra)

Pratiloma

Surya Bhedana

Chandra Bhedana

UNIT – 4 Kriya

Shankhaprakshalana, Laghoo Shankhaprakshalana, Agnisar kriya

Bhandhas: Jalandhara Bhandha, Moola Bhandha, Uddiyana Bhandha

Mudras: Chin mudra, Chinmaya mudra, Adhi mudra, Bhrma mudra, Bairava mudra, Nasiga mudra, Ganesha mudra, Bhudi mudra, Varuna mudra, Mukula mudra, Khechari mudra, Tadagi mudra, Shanmuki mudra.

UNIT – 5 Meditation

Japa, Soham & pranava Japa, Ajapajapa, Anatarmouna, OM meditation, Nadanusandhana

COURSE OUTCOMES:

- CO1 - Exposed to techniques of loosening the joints and Surya Namaskar
- CO2 - Oriented to some of the preliminary asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1											3	1	1	2
CO2											3	1	1	1

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3

1 - Low 2- Medium 3- High

Practical	**APPLIED PHYSIOLOGY**

PYT18CL102	**UNIT – 1** Measurement of Temperature, Pulse rate, Respiratory rate **UNIT – 2** Measurement of Blood Pressure **UNIT – 3** Sensory functions – Examinations **UNIT – 4** Muscle Examinations **UNIT – 5** Identification of a specimen organ and explain its functions

COURSE OUTCOMES:

- CO1 - Learn about the measurement of physiological variables such as temperature, pulse rate, respiratory rate and blood pressure
- CO2 - Physical examination of sensory function and muscles is learned
- CO3 - Oriented to identify an organ specimen and explain its functions

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1			3	1	1				3	1				1
CO2			1	1	1				3	1				1
CO3			3	1	1				1	1				1

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2

1	3	3
2	3	3
3	2	3

PYT18CT201

YOGA THERAPY AND PSYCHOLOGY

UNIT – 1

Psychology: Meaning, definitions, Nature, Need, scope of Psychology – Psychology and Yoga, role of Yoga on Heredity and Environment, learning, Emotions**,** memory, Cognition, Intelligence, Attention, Attitude, Personality.

UNIT – 2

Growth and Development: Life span periods, Yoga for different stages of life: infancy, early childhood, later childhood, Adolescence, adulthood, old age, women, Yoga for Professional people.

UNIT – 3

25 ELEMENTS, KOSHAS, Doshas, Gunas, nadis and chakras, Mind, Types of mind, folded, mental faculties, stages, States, sources and powers of mind, unfolding powers of Mind, Yoga for super-consciousness.

UNIT – 4

Spirituality: meaning, definition, Role of Yoga Religion on Spirituality values, type of values, divine virtues. Methods of developing spirituality.

UNIT – 5

Role of Yoga on psychology qualities and psychological disorders Neurosis: Anxiety, Phobias, obsessions, Compulsion, stress, hysteria, Depression, suicide, Eating disorders, Suicide.

Psychosis: schizophrenia, Autism, Dementia, Bipolar disorder, Mental retardation Personality disorder: paranoid, Histrionic, drug addicts, gambling, Alcoholism, smoking,

anti-social personality disorders.

COURSE OUTCOMES:

- CO1 - Learn about the scope of psychology in yoga and the concept of developmental psychology
- CO2 - Gain an understanding in yogic psychology and spirituality
- CO3 - Understand the impact of yoga on various psychological disorders

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1				1	2	1	2	2		1		1		2
CO2				1	2	1	2	2		1		1		2
CO3				1	2	1	2	2		1		1		2

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	3
2	3	3
3	3	3

PYT18CT202

PHYSICAL EXAMINATION METHODS OF YOGA THERAPY

UNIT-1: EXAMINATION OF SPINE

1. spine with respect to kyphosis
2. spine with respect to lordosis
3. spine with respect to scoliosis
4. Axial twists
5. examination of low back
6. examination of neck

Unit- 2: EXAMINATION OF JOINTS

1. Kneejoint.
2. hip joint
3. shoulder joint
4. Ankle and foot

Unit-3: EXAMINATION OF MUSCLES

1. Various group of muscle
2. Muscles tone
3. Muscle bulk
4. Strength of various groups of muscles

Unit- 4: EXAMINATION OF ABDOMEN

1. Examination of abdominal organs
2. Interference of from examination
3. Examination of hernia sites

Unit-5: EXAMINATION OF NERVES

1. Examination of the neurological system.
2. examination of tremor
3. examination of find tremor

COURSE OUTCOMES:

- CO1 - Physical examination of spine, joints, abdomen, sensory function and muscles is learnt

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1			3	2	2				3	3		2		3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3

PYT18CT203	**METHODOLOGY IN YOGA THERAPY** **Unit 1 View in Yoga Therapy** 1. Hey I am on the symptoms 2. countering predisposing factors Hetu or the cause 3. aggravating factor 4. Hanam or the remedy 5. Relivering factors 6. Upayam or the tools Importance of regular reviews **Unit 2 Pariksha in Yoga therapy** 1. In depth study of the Diagnostic tool 2. darshanam 3. sparsnam 4. prasnam 5. group classes vs individual classes **Unit 3 Nadi Pariksha in Yoga therapy** 1. Nadi system-definition from text 2. The different type of Nadi and their significance 3. Methodology of Nadi Pariksha in Yoga therapy 4. Application of Nadi Pariksha in Yoga therapy 5. Differences between Nadi Pariksha and pulse reading **Unit 4 Application of Therapeutic tools** 1. Extensive theoretical and practical learning about these Diagnostic tools, especially with respect to. 2. The prerequisites for using this tools. 3. The exact technique of using these tools. 4. The limitations of the tools. 5. The principals involved in in inferring information by using these tools 6. Application of these tools during therapeutic intervention. **Unit 5 Modification as applied to yoga therapy** 1. Modification the adoption 2. Simplification vs intensification. 3. Form vs function. 4. Modification of asthma 5. Modification of Pranayama 6. Modification of meditation 7. modification of chanting
	COURSE OUTCOMES:

- CO1 - Gain the ability to identify the symptoms and causes of diseases
- CO2 - Learn the methodology of visually and physically examine, interview and perform nadi pariksha of the subjects
- CO3 - Ability to apply suitable therapeutic tools and modifications of yogic practices during therapeutic intervention is gained

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1				3	1	3			2	1	2	2		2
CO2				1	1	1			3	1	1	2		1
CO3				1	1				2	1	3	2		3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3

PYT18DE002

NUTRITION AND YOGA THERAPY

Unit I:

Nutrition: Macronutrients, micro nutrients, carbohydrates, fats, proteins, vitamins, minerals, water, balanced diet, benefits of vegetarian diet, gluten free and lactose free diet - composition of the meal (Grains, dairy products, vegetables and fruits nut, pulses, oil and fat), Mediterranean diet, Vegan diet, Low glycaemic diet, DASH diet, yogic diet, principles of yogic diet, characteristics of sattvic, rajasic and tamasic diet, diet for yogic practitioners

Unit II:

Food stuffs - Qualities of food - ancient thoughts on food - Guidelines of eating

Yogic diet: General introduction of Ahara; concept of Mitahara; Classification in yogic diet according to traditional Yoga texts; diet according to the body constitution (Prakriti) - Vata, Pitta and Kapha Gunas

Concepts of Diet - Pathya and Apathya according to Gheranda Samhita, Hatha Pradeepika and Bhagavad gita; importance of yogic diet in Yoga Sadhana and its role in healthy living.

Unit III:

Nutrition during various stages of life childhood, adolescence, adult hood, Middle aged & aged - Nutrition during pregnancy & tips.

Principles of weight control & Management.

Unit IV:

Nutrition therapy for infectious diseases: Malaria, Typhoid, cholera, whooping cough, tuberculosis, measles, venereal diseases, dysentery, leprosy

Unit V:

Nutrition therapy for life style diseases: HBP, diabetes, obesity, cancer, stroke

COURSE OUTCOMES:

- CO1 - Learn about macro and micronutrients and various diets and their application
- CO2 - Gain an understanding of yogic diet as prescribed in classical texts
- CO3 - Understand nutritional requirements during various life stages
- CO4 - Nutrition therapy for infectious and lifestyle diseases is learned

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14

CO1				1	1	2						2		1
CO2				1	1	2						2		1
CO3				1	1	2						2		1
CO4				1	1	2						2		1

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3
4	3	3

Generic

PYT18GE201

YOGIC PRACTICES

Unit I:

Essentials of yogic practices, cleanliness and food, bath, time ,sun, closing eyes, place, mirror, breathing, awareness, age limitation, sequence, blanket, clothes, position, emptying the bowels and stomach counter pose, pregnancy , contra –indication, duration, straining, special provisions for women and patients, fitness, posture , side effects.

Loosening the joints

Surya Namaskar: for children (10 steps)

Bihar School of yoga model

Vivekananda Kendra model

Unit II: Asanas: Vrkshsasana, Parivrtha Trikonasana, Virabhatrasana, Garudasana, Padahatasana, Ushtrasana, sirshasana, Halasana, Sarvangasana, Matsyasana, Bhujangasana, Salabhasana, Dhanurasna, Navasana, Nouhasana, Siddha Yoniasana, Artha Matsyendrasana, Pachimottanasana, Baddha konasana, kukutasana, Padmasana,

Vajrasana, Siddhasana, Savasana

Unit III: Pranayama

Yogic Breathing, Kapalbhati, Bhramari, Ujjayi, Sheetali, Sheetkari, Bhastrika, Nadi Shodhana

Unit IV: Kriyas: Jalaneti, Sutraneti

Bandhas: Jalandhara Bandha, Moola Bandha, Uddiyana Bandha

Mudras: Chin mudra, Chinmaya mudra, adhi mudra, Brama mudra, Bhairava mudra, Bhairavi mudra, Shanmuki mudra, vipareeta karani mudra, yoga mudra, ashwini mudra, nasiga mudra.

Unit V: Meditation

Yoga nidra, Rajayoga Meditation, Trataka meditation, Chakra Meditation, Nine-centred meditation, Preksha meditation, Mindfulness based stress Reduction Technique.

COURSE OUTCOMES:

- CO1 - Learn about the essentials of the yogic practices
- CO2 – Exposed to techniques of loosening the joints and Surya Namaskar for children
- CO3 - Oriented to some of the moderate-level asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1											3	1	2	2
CO2											3	1	2	2
CO3											3	1	2	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	2
2	3	3
3	3	3

Skill enhancement course PYT18SE201

COMPUTER APPLICATIONS

Unit 1

Introduction to computer- definition- type of computer- basic parts - hardware -software -input and output devices and asthmatic &logic unit control unit -CPU -comparison of human being and computer.

Unit 2

Microsoft Word: title Bar, Member, standard toolbar bar - formatting toolbar bar- formal bar, ruler bar, status bar –task bar creating document -formatting editing – deleting - copying - saving.

Unit 3

Microsoft Excel : title bar- menu bar- standard toolbar- formatting toolbar- formal bar creating -Ruler status bar – task bar – creating document - formatting -editing –deleting- saving -chart and mathematical operations.

Unit 4

Microsoft Power Point: preparing a slide - animation -clipart -pictures from file background designing- computer and communication – copying- saving- presentation- working with slide adding life printing running a slideshow presentation

Unit 5

Internet: introduction - History - uses – connection - worldwide web– usage of Internet Explorer -search box -email id - outwork Express - inbox outbox, sent items draft- sending messages , save, print, reply, forward, previous message and text chatting - role of computer in teaching the techniques of yoga Research, and data analysis literature collection through internet

COURSE OUTCOMES:

- CO1 - Develop theoretical and practical aspects of MS Word, Excel, PowerPoint and Internet
- CO2 – Ability to apply these applications in thesis and record preparation, and during presentations and demonstrations

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1								1	1					
CO2								1	1					

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	2
2	1	3

Co-curricular PYT18EC201

TEACHING PRACTICE IN EDUCATIONAL INSTITUTIONS

Teaching practice will be organized for 15 days during 2nd semester.

The assessment of the students is internal for 100 marks students should design programming in yoga and attitude practice and train in educational Institution for 15 days

COURSE OUTCOMES:

- CO1 - Experience in designing yogic programmes for various age groups
- CO2 – Practical teaching of yogic practices based on the needs and requirement of the subjects

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1								2	1	2	3	1	2	3
CO2								2	1	2	3	1	2	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3

Practical

PYT18CL201

PSYCHOLOGICAL TESTING

Anxiety
Assertiveness
Study skill
Job satisfaction
Emotional maturity
General mental alertness
Attitude
Adjustment
Division of attention
Steadiness
Learning
Reaction time

COURSE OUTCOMES:

- CO1 - Understand various cognitive and emotional states and gain competency

in measuring these variables through different psychological tools

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1					1	1	2	1	1	1				3

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	3

Practical

PYT18CL202

YOGIC PRACTICE AND MODIFICATIONS -II

Unit 1:

Loosening the joints

Surya Namaskara : for children (10 steps)

Bihar school of yoga Model

Viveka nanda Model

Unit 2:

Asanas: Vrkshasna, parivrirthatrikonasana, virbhadrasana, garudasana, padahastasana, ushatrasana, sirshasana, halasana, sarvangasana, matsyasana, bhujangasana, Salabhasana,Dhunarasana, Navasana,naukasana, siddhasana, siddhayoniasana, ardhamatsyasana, paschimouttanasana, Baddhkonasana, kukutasana, padmasana, vjrasana, siddhasana, savasna

Unit 3:

Pranayama: Yogic Breathing, Kapalabhati, Bharmri, Ujjayi, Sheetali, sheetkari, Bhastrika, Nadisodhna

Unit 4:

Kriya: Jalneti, sutraneti

Bandha: Jalandhara Bandha, Moola Bandha, Uddiyana Bandha

Mudra: Chin mudra, chimya mudra, Adi Mudra, Brahma Mudra, Bhirava Mudra, Bhairvi Mudra, shanmukhi Mudra, Vipareetakarni Mudra, Yoga Mudra, Ashwani Mudra, Nasiga mudra

Unit: 5

Meditation: Yoga nidra, Rajyoga Meditation, Tratka Memeditation, Chakra Meditation, Nine Centerd meditetion, Preksha Meditetion, Mindfulness Based Strees Reduction technique

COURSE OUTCOMES:

- CO1 - Exposed to techniques of loosening the joints and Surya Namaskar
- CO2 – Oriented to some of the moderate-level to advanced asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1											3	1	1	2
CO2											3	1	1	1

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes	Program Specific Outcomes (PSO)

(CO)	1	2
1	3	3
2	3	3

PYT18CT301

TEXT IN YOGA THERAPY

Unit-1:

Veda

Uapnishads: Ishasyopnshad, kena, kath, Mundaka, Mandukya, Aitareya, Taittriya, Chandongya, Brihadaryanaka, Upnishad

Bhagvadgita: Yoga in Bhagwatgita (chapter2), Karma yoga (chapter 3), Yoga in (chapter 6), Bhaktiyoga (chepter 12), yogic diet (chater 14-16), Moksha(chapter 18)

Unit 2:

Yoga sutra, thirumandiram yoga, yajnavalkya samhitha, yoga rahasya

Unit 3:

Goraksataka, Hatha yoga pradipeeka, Gheranda samhita, Siva samhita, Hatha Ratnavali

Unit 4:

Sushrut Samhita, Charka Samhita, Manusmriti, Sankhya Darshana, Vyasa Bhashaya, Vairagyashatak Dhyan yoga prakasa.

Unit 5:

yoaga therapy in swami ramdev's book ,mukunda stile's structural yoga therapy, B.K.S. Iyangar's yoga ,the path of Holistic Health,Bihar school of yoga's yogic management of common disease,krishnamacharya yoga makaranda, chandrashekaran's yoga therap,swami sivananda sarswati, yoga therapy swami kuvaalyananda ,yoga therapy svyasa'collection

COURSE OUTCOMES:

- CO1 - Learn about Vedas and principle Upanishads
- CO2 - Understand important concepts and tenets of Bagavad Gita and Yoga Vashista
- CO3 - In-depth study and understanding of the concepts and philosophy of basic

hatha yoga texts, Ayurveda texts, and Indian philosophy

- CO4 - Understand the yoga therapy techniques and approaches as defined by the modern Hatha Yoga texts

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1	3	3									3		1	1
CO2	3	3									3		1	1
CO3	3	3									3		1	1
CO4	3	3									3		1	1

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	1
2	2	1
3	2	2
4	3	3

PYT18CT302

PATHOLOGY AILMENTS AND YOGA THERAPY

UNIT-1 – Pathological Study – Yogic perspective

- Study of important pathological conditions as seen by allopathic system
- Basic understanding of pathological changes in ailments
- Yogic way of assessment and confirmation of these changes in an individual.
- Therapeutic application of yoga for the ailments with some important diseases as

	examples with particular reference to what to avoid, what to prescribe and how to modify them to suit the individual - Study of the manifestation of these ailments and the effect of the ailment on the individual and the principles behind the individualstic approach of yoga - Disease oriented approach vs. individual oriented approach. **UNIT-2**-Theraputic application of yoga in skeleton-muscular system - Low back pain - Sciatica - Cervical spondilosis - Ankylosing spondilosis - Osteoarthritis - Rheumatoid arthritis **UNIT-3**- Therapeutic application of yoga in Digestive System - Gastritis - Peptic ulcer disease - Hernia - Constipation **UNIT-4**-Therapeutic application of yoga in Respiratory and Cardio – Vascular System - Allergic sinusitis - Asthma - COPD - Hypertension - Circulatory Insufficiency - Varicose vein **UNIT-5**-Theraeutic application of yoga in Nervous, Endocrine, Urinary, Lymphatic, Reproductive system and sensory conditions. - Migraine

- Epilepsy and stroke
- Hypo and hyperthyroidism
- Irregular periods
- Pregnancy-pre &post natal care
- Urinary insufficiency
- Lymphatic edema
- Refractive errors in the eye

COURSE OUTCOMES:

- CO1 - Learn about the Allopathic and yogic pathology of diseases
- CO2 - Ability to asses and prescribe yoga therapy for important diseases
- CO3 - Gain knowledge about the yogic intervention specific to major systems of the body and their respective ailments

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1		3	1	3	1	1	1			2		2	2	2
CO2		2	1	1	1	1	1	3		2	2		2	2
CO3		2	1	1	1	1	1			2	3	2	2	2

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3

PYT18CT303	**TRADITIONAL SYSTEMS OF MEDICINE & THERAPIES** **UNIT-1** Origin of Ayurveda – Aim and importance of Ayurveda , Philosophy and goals of Ayurveda, Unique Approach of Ayurveda – Ayurveda texts, chakra samhita, Sushruta Samhita, Kashyapa Samhita, Rasatantra, Unique features of Ayurveda – Hygienic principles of Ayurveda (Dhinacharya)- Five elements of Ayurveda Doshas, Gunas, Dhatus, Upa hatus, Eight Categories or branches of treatment – Nadis vijnana – Nadis and Chakras,- Charecteristics of different prakritis- causes of disease- method of disease examination – Ayurveda diet. **UNIT-2** Ayurveda effects of yogic principles & theraopies – Ayurvedic purification practices – Panchakarma- vamanam, virechanam, basti, Anuvasana, Nasya, Rakta Moksana- Abhyanga, Swedanam, Nasayam, Njavarakizhi, Pizhichil. **UNIT-3** History and concepts of Siddha medicine: Principles of Siddha Medicine System, Five Elements Theory, Three Biological Humars, Seven Physical Constituents, Pancha Bhudas , Pancha Koshas, Types of Siddha Medicine, Importance of Kayakalpa, Kitchen and herbal medicine, Diet Regulations, Varmam and Thokkanam, Treatment of siddha Medicine for life style diseases. **UNIT-4** Concept of Naturopathy – Principles of Naturopathy – Methods of Naturopathy: Diet, Fasting, Treatment by earth, water treatment, Treatment by rays, Massage. **UNIT-5** Acupuncture, Acupressure, Exercise therapy, Physiotherapy, Music therapy, Color therapy, Magneto Therapy, Reiki.

COURSE OUTCOMES:

- CO1 - Understand the principles and philosophy of important Ayurveda texts
- CO2 - Gain knowledge about the Ayurvedic purification practices and Ayurvedic diet
- CO3 – Understand the principles of Siddha medicine and treatment for lifestyle disorders
- CO4 - Various alternative therapies and nature cure treatment approaches are learned

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1		1		2	1		1		2	2				1
CO2		1		2	1		1		2	2				1
CO3		1		2	1		1		2	2				1
CO4		1		2	1		1		2	2				1

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	2
2	2	2
3	2	2
4	3	3

Discipline Specific Elective	**METHODS OF NATUROPATHY**

Unit I:

PYT18DE005

Meaning - Definitions - Scope - Principles and Philosophy of Naturopathy- Modalities of Naturopathy: Diet therapy, fasting therapy, mud therapy, hydro therapy, colon hydrotherapy, Massage therapy, air therapy, chromo therapy, Magento therapy, Sun rays

Unit II:

Mud therapy: Mud pack, Chest pack, Mud Bath, Mud pack for face, Knee mud pack, Wet-sheet pack for the whole body, Banana leaf bath

Unit III:

Hydro therapy: Enema, Hip Bath, alternative hip bath, Sitz Bath, Spinal Bath, Spinal spray bath, Foot and arm bath, Hot foot bath, Arm bath.

Unit IV:

Steam bath, Sauna bath, Sponge bath, immersion bath, Friction bath, Under water massage, Wet sheet pack, chest pack, knee pack, Local steam, steam inhalation, Jet spray massages, Color Hydrotheraphy, Whirlpool bath.

Unit V:

Naturopathy Diet (Eliminative , soothing, constructive), Fasting, Sunbath, Air bath, massage

COURSE OUTCOMES:

- CO1 - Gain an understanding of the principles, philosophy and modalities of naturopathy
- CO2 – Learn about the therapeutic naturopathy treatments such as mud therapy, hydrotherapy, steam bath and diet and their application for common disorders

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1				2			1					1		
CO2				2			1					1		

	1 - Low 2- Medium 3- High **MAPPING (CO's and PSO's)** Course Outcomes (CO) / Program Specific Outcomes (PSO) 1 - 1: 3, 1 - 2: 3 2 - 1: 3, 2 - 2: 3
Generic PYT18GE301	**STRESS MANAGEMENT** **Unit I:** Meaning , Concepts, levels, types, reaction, causes, symptoms, complications, remedies, stress and yoga **Unit II:** Sources of stress: internal and external, release of stress **Unit III:** Texts on stress, Kleshas and stress, Stress and koshas **Unit IV:** Effective stress management- Diet, yogic practices- systems of medicine and therapies **Unit V:** Frustration, conflicts and psychosomatic disorders, relationship between body and mind, mental health.
	COURSE OUTCOMES: • CO1 - Understand the concepts, types and remedies of stress

- CO2 – Learn about the yogic approach to stress management

- CO3 - Gain an insight on the impact of stress management on psychosomatic disorders and mental health

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1		2	1		1	1	2			1			2	1
CO2		2	1		1	1	2			1	2	2	2	1
CO3		2	1		1	1	2			1		2	2	1

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	2	3

Ability enhancement compulsory course PYT18AE301

PERSONALITY DEVELOPMENT

Unit-1

Personality: Personality in psychology – Meaning, Definition, concept, need, nature and scope of personality development- structure of personality.

	Unit-2 Stage of human development- determinants of human development of personality- developmental processes: physical, mental, moral, social, emotional and spiritual. **Unit-3** Guidelines on personality – values and spirituality- developing good personality based on yoga- anger and stress management- role of diet on personality. **Unit-4** Personality development with special emphasis on pancha kosha- Ashtanga yoga- Factors of personality- Theories of personality- Attitude- Self-esteem, - Memory-Concentration-creativity-intelligence- Assessment of personality. **Unit-5** Leadership- Qualities of leaders-Positive thinking- powers and effects of thoughts- career planning –career rules- Better human relations- time management.
	COURSE OUTCOMES: • CO1 - Learn about the concepts and developmental processes of personality • CO2 - Understand the role of yoga, diet and stress management in developing the personality. • CO3 - Gain insight into the development of leadership qualities and career development **MAPPING (CO's and PO's)**

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1						1	1	1		1		2		1
CO2						1	1	1		1		2		1
CO3						1	1	3		1		2		1

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	1
2	2	3
3	1	1

Co-curricular PYT18EC301

INTERNSHIP

(HOSPITALS OR HEALTH CENTERS OR YOGA OR NATUROPATHY CENTRES

Internship will be organized for 15 days. The assessment of the students is internal for 100 marks. Students should design programme in yoga and are to practice and train in Hospitals or Yoga or Naturopathy Centres for 15 days.

COURSE OUTCOMES:

- CO1 - Experience in designing yogic programmes for various age groups and people with disorders
- CO2 – Practical teaching of yogic practices based on the needs and requirement of the subjects

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1					1				3	2	2	1	2	2
CO2					1				3	2	2	1	2	2

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3

PRACTICAL
PYT18CL301

YOGIC PRACTICES AND MODIFICATIONS-III

Unit-1: Loosening the joints

Pawanmuktasana series

Suryanamaskar: Sivananda Model, Chandranamaskar

Unit-2: Asanas

Virabhadrasana, Parsavottanasana, UthithaTrikonasana, AdhomukaSavasana, Karnapidasana, Kandharasana, Titibhasana, Padma Sarvankasana, Salamba Sirasasana, gomukasana, Setubandhasana, Chakrasana, TriangaMukhaipada paschimottanasana, Marichyasana, Virasana, Svastikasana, Shashangasana, Garudasana, Mayurasana, Padma Mayurasana, Bhadrasana,Simhasana, AkarnaDhanurasana, Parsvakonasana, Savasana.

Unit-3:Pranayama

Moorchapranayama, Anulomaviloma, Sadanta Pranayama, Pranayama with Kumbhaka and bhandhas

Kriya

Dhanda dhauti, Vatsara dhauti, Nauli (Madhyama, Vama, Dakshina)

Unit-4

Mudras: Yoni Mudra, Lotus Mudra, Dhyani Mudra, Sakthi Mudra, Shambavi Mudra, Pashinee Mudra, MahaBheda Mudra, Ksepana Mudra.

Unit-5

Meditation : DRT, Walking Meditation, Vipasana Meditation, Nine centered Meditation, Yogic Sukshmavyama, Sudharsiya, Zen Meditation, SavitakidhyanDharana, Mind sound Resonance Technique.

COURSE OUTCOMES:

- CO1 – Learn about the essentials of the yogic practices
- CO2 – Exposed to techniques of loosening the joints and Surya Namaskar
- CO3 - Oriented to some of the moderate-level to advanced asanas, pranayama, kriya, bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1											3	1	2	2
CO2											3	1	2	2
CO3											3	1	2	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)		
	1	2	
1	1	2	
2	3	3	
3	3	3	

Practicals

PYO18CL302

CLINICAL APPLICATION IN TRADITIONAL INDIAN SYSTEMS OF MEDICINE AND THERAPIES

UNIT-1

Application of traditional Indian medical systems and therapies.
Ayurveda – Doshas, Dinacharya, Ayurvedic Diet, panchakarma Therapy, Siddha – Five elements theory, physical constituents, pathology (Kayakalpa,Kitchen Herbal and other types of medicine), Naturopathy and Modalities of Naturopathy.

UNIT-2

Varmam and Thokkanam, Exercise therapy, Cryo therapy, Acupressure, Acupuncture, Chromo Therapy, Magneto Therapy, Music Therapy, Pranic healing, Magnetotherapy, Reflexology

UNIT-3

Therapeutic application for: High Blood Pressure, Obesity,Diabetes Mellitus, Asthma, Sinusities, Migraine, Arthritis, Back pain, Thyroid Problems, Constipation, Impotency, infertility, stroke, epilepsy, Parkinsons disease, sleep disorders,skin diseases, insomnia, Anaemia.

UNIT-4

Therapeutic applications for psychological disorders:
Neurosis: Stress, Depression, eating disorders,
Psychosis: Schizophrenia, autism, Bipolar disorders, dementia
Personality Disorders: Paranoid, histrionic, drug addicts, smoking alcoholism, gambling, anti-social activities.

UNIT-5

Therapeutic applications for the problems of women- Amenorrhea, Dysmenorrhea,

Menorrhagia Hypomenorrhoea, Oligomenorrhoea, polymenorrhoea, leucorrhoea, uterus related problems, miscarriage, pregnancy-pre and post natal care, PCOS.

COURSE OUTCOMES:

- CO1 - Gain practical knowledge about the concepts and principles of yoga therapy, Ayurveda, and siddha, naturopathy, acupuncture, acupressure, physiotherapy, and their clinical application for diseases

- CO2 - Understand the treatment modalities in yoga therapy, Ayurveda, and siddha for life-style disorders, psychological disorders, and disorders specific to women

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1		2		3	1	1			1			1	1	2
CO2		2		3	1	1			1			1	1	2

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	2
2	3	3

PYO18CT401 **RESEARCH PROCESS IN YOGA THERAPY**

Unit-1: Research –Meaning, Definitions, Need, Nature and scope of research in yoga, Types of research- Basic-Applied-Action – Qualities of a researcher-Criteria in locating and selecting a research problem- preparation of research proposal Mechanism of research proposal- formulation of hypothesis-variables and its types.

	Unit-2: Types of research design –Describe research –survey method, cae study, method, Experimental Method- Categories: Longitudinal design, Quasi Experimental design, cross sectional design, Double blind placebo design, Experimental Design Types: Single group Design Reverse group design, Repeated measure design static group comparison design, Rotated group design, Random group design, Equated group design, Factorial design. **Unit-3**: Data- Population- Sample-Subject- Sampling: Characteristics, Principles, steps, Determining the sample size, criteria in selection, Types of sampling probability sampling methods- Random and complex, Non –Probability Sampling methods- Writing Synopsis and Research report-Front Materials, Main Chapters and Back materials- Recent trends in yoga research, yoga research centres and their works in India. **Unit-4**: Statistics-Meaning- Need and importance in research – non-parametric statistics- Treatment of F-test, 't' test one way- two way – testing- chi square-statistical packages- SPSS-SAS- data process, data analysis-Graphical Representation, Data interpretation. **Unit-5**: Types of Statistics- Parametric and non-parametric-Normality of data-Normal Curve – Data Analysis-'t' Test, F-test Type I Type II error-ANOVA-ANCOVA,(one way & two way)-Post hoc test-pearson product moment correlation-Partial and Multiple Correlation- Regression simple linear and multiple linear-Post hoc tests.
	COURSE OUTCOMES: CO1 - Understand the nature and scope of research in yoga, various research methods and design, and areas of research CO2 – Learn to prepare a research proposal, formulate hypothesis, and implement research design and sampling C03 - Learn to write research report and synopsis

CO4 - Gain practical competency in statistical concepts related to experimental research

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1					2				2	2	2	3		2
CO2					2				2	2	2	3		2
CO3														
CO4														

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	3
2	1	3
3	1	3
4	1	3

PYO18CT402

YOGA THERAPY IN YOGA SUTRAS

Unit : l

Basics and date of the yoga sutra –Raja yoga – notable commentaries- Ashtanga yoga; Yoga- mind – psychic powers.

1) Samadhi pada
2) Sadhana pada
3) Vibhuti pada
4) Kaivalyabpada

Unit: ll

1:1-2, 1:5 to 7, 1:12, 1:17 to 18, 1:30 to 51.

Unit: lll

2:1 to 11, 1:23 to 24, 2:28 to 55.

Unit: lV

3: 1 to 9, 3:25 to 38, 3:41, 3:56.

Unit :V

4:1, 4:7, 4:19, 4:34.

COURSE OUTCOMES:

- CO1 - Understand the philosophy, principles, concepts and commentaries of Yoga Sutra
- CO2 - In-depth study of Samadhi Pada, Sadhana Pada, Vibhuti Pada and Kaivalya Pada with specific importance to the therapeutic application

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1	3	3					1						2	
CO2	3	3					1						2	

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	1
2	2	1

PYT18CT403	**THESIS**

1) To acquire practical knowledge.
2) To acquire skill in the administration of yoga practices in the real life.
3) To identify some common problems found among people.
4) To do a systematic investigation into such problems.
5) To suggest remedial measures to make life more meaningful and purposeful.
6) To learn the clinical method, case history writing, measurement of clinical symptoms, psychological parameters. Application of statistics on the initial and final dada recorded.

COURSE OUTCOMES:

- CO1 - Acquire practical skills in a systematic investigation of a research problem
- CO2 - Organize the samples and sampling techniques which is relevant to the study
- CO3 – Apply the statistics in research thesis for evaluation
- CO4 – Learn measurement of clinical symptoms and psychological parameters
- CO5 – Organizing the data and presenting it as a thesis

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1				1	2	1	1	2	3	1		2		3
CO2														
CO3														
CO4				1	2	1	1	2	3	1		2		3
CO5														

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	3
2	1	3

	3	1	3
	4	1	3
	5	1	3

PRACTICAL

PYT18CL401

YOGA PRACTICES AND MODIFICATIONS – IV

Unit : l

Loosening the joints.
Pavanmuktasana Series.
Suryanamaskar : kriya Suryanamaskar , Advance Suryanamaskar,

Unit: ll

Asanas: Ardha baddha padmottaanasana. Utthita Hasta Padangusthasana. Vatayanasana. Hanumasana. Padangushthasana. Padma Sarvangasana, kama Pidasana, Vrischikasana , poorna Bhujangasana, poorna salabhasana, poorna Dhanurasana, poorna matsyendrasana, Eak pada Sirsasana, KOOrmasana, Padma Sirshasana, Ardha Baddha Pachimottanasana, Paryangasana, Bhekasana, Baddha Padmasana, Vamadevasana, Parivritti Janusirshasana, Savasana.

Unit:lll

Pranayama**:** Kewali Pranayama (Soham), Plawini Pranayama, Kumbhaka and Bandhas with ratios.

Unit:lV

Kriyas**:** Ghrta Neti, Dugdha Neti, Basti (Enema)
Bandhas: Maha Bandha.
Mudras**:** Kaki Mudra, Bhujangini Mudra, Vipareeta Karani Mudra, Kundalini Mudra, Mahavedha Mudra, Vajroli/Sahajili Mudra, Manduki Mudra, Ashwini Mudra,

Unit :V

Meditation: Transcendental, Cyclic (S- vyasa), Guided Meditation, Dynamic Meditation, Tibetan Meditation.

COURSE OUTCOMES:

- CO1 - Learn about the essentials of the yogic practices
- CO2 - Exposed to techniques of loosening the joints and advanced Surya Namaskar
- CO3 - Oriented to some of the advanced level of asanas, pranayama, kriya,

bandhas, mudras and meditation

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1											3	1	2	2
CO2											3	1	2	2
CO3											3	1	2	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	1
2	3	3
3	2	3

PRACTICAL

PYT18CL402

CLINICAL APPLICATIONS IN TRADITIONAL SYSTEMS OF MEDICINE AND YOGA THERAPY

Unit :l

- Vyuham in yoga therapy
- Heyam or the symptoms
- Countering predisposing factors.
- Hetu or the cause
- Aggravating factors
- Hanam or the remedy

	➢ Rellieving factors ➢ Upayam or the tools ➢ Importance of regular reviews ❖ **Pariksa in yoga therapy** ➢ In depth study of the diagnostic tools ➢ Darsanam ➢ Sparsanam ➢ Prasanam ➢ Neetakanta Model; The ideal teacher student relationship ❖ **Nadi pariksa in yoga Therapy** ➢ Group classes vs. Individual classes. ➢ Nadi system- Definition from texts. ➢ The different of nadi pariksa in yoga therapy. ➢ Methodology of nadi pariksa in yoga therapy ➢ Differences between Nadi pariksa and pulse reading **Unit II Application of Yoga Therapy** **Extensive theoretical and practical learning about these diagnostic tools. Specially with respect to:** ➢ The pre requisites for using these tools. ➢ The exact technique of using these tools ➢ The limitations of these tools ➢ The principles involved in inferring information by using these tools ➢ Application of these tools during therapeutic intervention.

	❖ **Modification an applied to Therapy** ➢ Modification vs adaptation ➢ Simplification vs intensification ➢ From vs function ➢ Modification of asana ➢ Modification of meditation ➢ Modification of chanting. **Unit lll** ❖ Therapeutic application of yoga in skeleton- muscular system ➢ Low back pain ➢ Cervical spondylosis ➢ Spondylosis ➢ Ankyilosing spondilosis ➢ Osteoarthritis ➢ Rheumatoid arthritis **Unit: IV** ❖ Therapeutic application of yoga of in digestive system ➢ Gastritis ➢ Peptic ulcer disease ➢ Hernia ➢ Constipation ❖ Therapeutic application of yoga of in Respiratory system ➢ Allergic sinusitis ➢ Asthma

	➢ COPD ❖ **The Therapeutic application of yoga in cardiovascular system** ➢ Hypertension ➢ Circulatory insufficiency ➢ Varicose veins **Unit: V** The Therapeutic application of yoga in Nervous, Endocrine, Urinary, Lymphatic, Reproductive system and sensory Conditions. ➢ Migraine ➢ Epilepsy and stokes ➢ Hypo and Hyperthyroidism ➢ Irregular periods ➢ Pregnancy – pre & post natal care ➢ Urinary insufficiency ➢ Lymphatic Edema ➢ Refractive errors in the eyes.
	COURSE OUTCOMES: • CO1 – Gain practical knowledge about the causes, symptoms, and predisposing factors of various diseases • CO2 – Learn about the principles and application of various diagnostic and therapeutic tools of yoga therapy • CO3 – Understand the methodology and application of nadi pariksha for therapeutic intervention • CO4 – Learn techniques of modifying asanas, pranayama, meditation and chanting in therapeutic intervention

- CO5 – Study the application of therapeutic yogic modules for disorders of the major systems of the body

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1		2		3	1	1	1			2			1	3
CO2					1				3	2	2	1	2	3
CO3			1						3	2				
CO4	2	2		1						3	3		3	3
CO5										2	3	2	3	3

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	3	3
2	3	3
3	3	3
4	3	3
5	3	3

Discipline Specific Elective

PYT18DE008

STATISTICS IN YOGA THERAPY

UNIT-I

Statistics-Basic Concept -Need and Importance of Statistics; Data-Raw and Grouped, Types of data; Concept And Calculations of Measures of Central Tendency-Mean, Median And Mode; Measures of Variability- Range, Mean Deviation, Quartile Deviation And Standard Deviation.

UNIT-II

Introduction To Normal Distribution - Normal Curve - Characteristics of Normal Curve - Properties of Normal Curve - Standard Normal Curve - Problem Based On Normal

Distribution - Uses of Normal Distribution.

UNIT-III

Testing Of Hypothesis - Procedure, Types of Hypothesis, Level of Significance, One Tailed and Two Tailed Test, Degrees of Freedom; Test of Significance for Difference of Means- t Test -Independence and Dependence Test, Z-Test ; One Way Analysis of Variance.

UNIT-IV

Correlation- Pearson Product Moment Correlation, Spearman Rank Order Correlation, Phi Correlation, Biserial Correlation Partial and Multiple Correlation

UNIT-V

Non Parametric: Chi Square Test - Equal Occurrence Test, Independence of Attributes, Contingency Coefficient; Graphical Representation - Line Diagram, Bar Diagram- Multiple Bar Diagram, Pie Diagram.

COURSE OUTCOMES:

- CO1 - Learn about the types of data and the measures of central tendency and variability
- CO2 - Understand normal distribution and testing of hypothesis through T test, ANOVA, correlation, and non-parametric tests
- CO3 - Gain ability to present data through graphical representations

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1												2		
CO2												2		
CO3												2		

1 - Low 2- Medium 3- High

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2

1	1	3
2	1	3
3	1	3

Skill-enhancement course PYT18SE401

ENVIRONMENTAL STUDIES

Unit: l

Scope and importance- need for public awareness.

Unit: ll

Resources – Water – Forest – Minerals- Food Energy- land.

Unit: lll

Ron mental – pollution- definition – causes- Effects and control measure of Air pollution – Water- Soil-Noise- Nuclear.

Unit: lV

Social issues and the environment- Urban problems related to energy – Water conservation – Rainwater harvesting- Water shed management- Environment ethics- Climate change – Global warning – Acid rain – Ozone layer deletion.

Unit: V

Human Population and the Environment – population growth variation among Nation population explosion – Family welfare program- Environment – and human wealth.

COURSE OUTCOMES:

- CO1 - Raises awareness about the environment, natural resources and social issues that affect environment
- CO2 - Learn about the causes and effects of environmental pollution and means to control it
- CO3 - Understand the impact of various social issues and population growth on the environment

MAPPING (CO's and PO's)

Course Outcome	Programe Outcomes													
	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO 10	PO 11	PO 12	PO 13	PO 14
CO1						2	1					2		

CO2						2	1					1		
CO3						2	1					2		

1 - Low **2- Medium** **3- High**

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	2
2	1	1
3	1	1

UEN18CT102 FUNDAMENTALS IN FOOD SCIENCE

UNIT -I

Definition of Food- Components of food -Nutrition,Health, Nutrients- History of Nutrition -Nutrients and Their Functions-Balanced Diet- Nutritional Status-Good Nutritional Status- Relation between Good Nutrition and Health- Poor Nutritional Status-Malnutrition- Concepts of Malnutrition - Food Groups to Encourage- Physiological functions of food - Nutrition Assessment.

UNIT –II

Cooking-Objectives of Cooking- Cooking Methods:Moist Heat Methods-Boiling-Simmering- Stewing-Steaming-Pressure cooking Merits-Demerits -Dry Heat Methods- Air as medium of cooking- Fat as medium of cooking-Combination of Cooking Methods- Merits and Demerits -Solar cooking – Microwave cooking – Food safety – Food preservation – Benefits of sprouting and fermentation.

UNIT –III

Cereal and Cereal Products: Structure, Composition- Nutritive Value of Cereals-Rice and Wheat, Ragi, Maize, and Jowar, Parboiling and Milling -Processing-Fermented Cereal Products-Breakfast cereals- Role of Cereals in Cookery-Pulses: Nutrient Content of Pulses- Germination-Factors Affecting Pulse Cookery-Role of Pulses in Cookery.

UNIT –IV

Vegetables and Fruits: Classification of Vegetables-Nutrient Content of Vegetables and Fruits-Pigments and Flavor Compounds-Need for inclusion of Fruits and Vegetables in the Days Menu-Conservation of Nutrients in Preparation and Cooking of Vegetables-Nuts and Oil Seeds: Nutritive Value of Nuts-Specific Nuts andOil Seeds-Role of Nuts in Cookery Phytonutrients and polyphenols.

UNIT –V

Milk and Milk Products: Nutritive Value of Milk-Types of Processed Milk-Physical Properties of Milk-Pasteurization of Milk-Milk Products Role of Milk and Milk Products in Cookery – Lactose Intolerance –Flesh Foods and Egg: Nutritive Value and Selection Criteria of Meat, Poultry, Egg and Fish-Use of Egg in Cookery-Fats and Oils: Nutritional Significance-Refined Oils-Hydrogenation – Vanaspathi and Margarine- Rancidity-Smoking Point-Role of Fat / Oil in Cookery.

REFERENCE BOOKS:

1. Srilakshmi B (2013), 'Food Science' Fifth Edition, New Age International Publishers, New Delhi.
2. Manay S and Shadaksharaswamy M, (1997), 'Food Facts and Principles' New Age International Publishers, New Delhi.
3. Srilakshmi B (2015), 'Nutrition Science' Fourth Edition, New Age International Publishers, New Delhi.

COURSE OUTCOMES:

After studying this paper, the student should be able to:

- Nutrients and their primary functions
- Recognize common characteristics of well-nourished people
- Recognize symptoms of malnutrition and nutrition assessment
- Understand the scientific principles underlying food preparation.

MAPPING:

COURSE OUTCOME	PO 1	PO2	PO3
1	3	3	3
2	3	3	3
3	3		
4	3		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1		1
2		1
3		1
4		1

UEN18CT203 CLINICAL EXERCISE TESTING PROCEDURES

UNIT -1.

Assessment of cardio respiratory variables – YMCA cycle ergometer- treadmill stress monitor - VO2 max test - PO2 -PCO2- lactate threshold- measuring methods of TMR and RMR

UNIT II

Biochemical testing procedure - liver profile test - lipid profile test measuring pulse rate - blood pressure – testing procedure - sodium - potassium- magnesium - protein- iron and anemia testing procedure

UNIT III

Doping and its types - testing procedure - stimulants - anabolic steroids- hormones and other related substances - estrogen- progesterone- testosterone

UNIT IV

Lung function test - oxygen dissociation curve - assessment of resting lung function - during exercise - assessment of neural transmission - heart rate monitor - Hydration measurement.

UNIT V

Assessment of nutritional status - 3 day food record - 7 day food record - 24 hours recall- food frequency - diet history - role of nutrition software to assess capacity of athlete.

REFERENCES

1. Ferrer M, Alonso A, Morera J, et al. Chronic obstructive pulmonary diseases stage and health related quality of life. The quality of life of chronic obstructive pulmonary disease study group. Ann Intern Med 1997; 127: 1072–1079.
2. Jones PW. Health status measurement in chronic obstructive pulmonary disease. Thorax 2001; 56: 880–887.
3. ATS statement: guidelines for the six-minute walk test. Am J RespirCrit Care Med 2002; 166: 111– 117.
4. Kessler R, Faller M, Fourgaut G, Mennecier B, Weitzenblum E. Predictive factors of hospitalization for acute exacerbation in a series of 64 patients with chronic obstructive pulmonary disease. Am J RespirCrit Care Med 1999; 159: 158–164.

CORSE OUTCOME:

On completion of this instruction

1. Students will be able to accurately screen, assess.
2. Students should be able to utilize laboratory testing that measures heart rate, blood irredeemable Uptake, body co position and flexibility

MAPPING:

Course outcome	Po1	Po2	Po3
1	3		3
2	3		3

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1	1	
2	1	

UEN18CT303 CLINICAL DIETETICS

UNIT - I

Definition of Dietetics, clinical dietetics - Food borne infections – definition- causes – symptoms – characteristics – control measures – types of diets for food borne infections – functions of the Liver – causes of liver damage – Alcoholic liver disease –NAFLD (Non Alcoholic Fatty Liver Disease) diets for liver disease

UNIT - II

Functions of the Kidney – causes of acute renal failure – dietary intervention for chronic renal failure – Hemodialysis – Continuous Ambulatory Peritoneal dialysis (CAPD)- protein restricted diet.

UNIT - III

Definition of Obesity, Hypertension , Hypercholesterolemia– risk factors for obesity - Insulin Resistance (IR) – PCOD: Hypertension , Hypercholesterolemia – BMI – Measurement of Body fat Percent – Guideline for weight gain – Definition of diabetes – Types - symptoms – dietary guidelines – types of fat – Hyperlipidaemia – dietary allowance

UNIT – IV

Definition, causes, symptoms and treatment of Anorexia Nervosa - Dumping Syndrome – Early Dumping – Dietary advice – Late dumping – dietary advice – Irritable Bowel Syndrome – FODMAPs Diet – Symptoms – Dietary treatment – Diarrhea - meaning – definition – symptoms – food to avoid – Mal Absorption Syndrome – causes and symptoms –Coeliac Disease – foods allowed - Cancer – causes – symptoms – Dietary intervention.

UNIT - V

Assessment of Nutritional Status for patient admitted in Hospital – Aim of Nutritional Assessment – Methods of Assessment of Nutritional Status – weight – dietary history – anthropometric measures – Dynamometry(grip strength)- Biochemical measures – special feeding method – Enteral feeding – Home enteral feeding - Parenteral nuritio – method – administration of parenteral solution.

REFERENCE BOOKS:

1. Janice Thompson, Melinda Manore, (2005), “Nutrition : an applied approach”, pearson.
2. Heather Hedrick fink ,lisa A. Mikesky, (2006), practical application in sports nutrition.
3. Robert E.C.Wildman , Barry S. Miller, (2004), “Sports and Fitness Nutrition”, Thompson.
4. McArdle William D.Et.al., (2005) , “Exercise Physiology, Nutrition and Human Performance, Philadelphia lea and febiger.

COURSE OUTCOMES:

1. Prepare graduates to promote health of medically complex clients through clinical residencies and special projects in clinical nutrition.
2. Prepare Graduates to collaborate with other members of the health care team, industry and academia as the nutrition experts.

MAPPING:

COURSE OUTCOME	PO1	PO2	PO3
1	3		
2	3		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1		1
2		1

UEN18DE502 STRENGTH TRAINING AND CONDITIONING

UNIT - I

Meaning and Definition of Strength training and conditioning-Benefits of resistance training-Principles of Resistance Training: Progressive overload- Specificity- Variation-Individualization and Detraining- Resistance Training Program Design: Exercise Selection-Exercise order and Workout Structure-Intensity-Training Volume-Rest Intervals-Repetition Velocity-Frequency.

UNIT - II

Competitive forms of Resistance Training- Resistance Training Modalities: Body Weight-Manual or Partner Resistance-Free Weights: Advantages-Disadvantages Machines: Advantages-Disadvantages –Free Weights versus Machines-Medicine Balls, Stability Balls, Bosu Balls, and Other Balance Devices-Elastic Bands, Tubing, Chains, and springs.

UNIT - III

The SAID Principle: Mechanical specificity-Neuromuscular specificity- Metabolic specificity-Progressive Adaptations from Resistance Training: Stabilization-Muscular endurance-Muscular hypertrophy-Strength- Power-Resistance Training Systems: The Single-Set System-The Multiple- Set System-The Pyramid System-The Superset System-Drop-Sets-The Circuit-Training System-The Peripheral Heart Action System-The Split-Routine System-Vertical Loading and Horizontal Loading

UNIT - IV

Stages of training -Stage I- Stage II- Stage III-Circuit Training-Continuous training-Fartlek training-Interval training.

UNIT - V

Cardiorespiratory Fitness: Benefits of Cardiorespiratory Fitness- Cardiorespiratory Fitness Training: Warm-Up Phase-Conditioning phase- Cool-down phase-General Guidelines for Cardiorespiratory Training: Frequency-Intensity-Time-Type-Methods for Prescribing Exercise
Intensity.

REFERENCE BOOKS:

1. Micheal A. Clark, Scott C. Lucett, and Brian G. Sutton,(2012), NASM Essentials of Personal Fitness Training, Fourth Edition, Lippincott Williams & Wilkins, a Wolters Kluwer business, Two Commerce Square, 2001Market Street, Philadelphia, PA 19103 USA.
2. Nicholas Ratamess, (2012), ACSM's Foundations of Strength Training and Conditioning, Lippincott Williams & Wilkins. 3. Thomas R. Baechle, and Roger W. Earl, (2008), Essentials of Strength Training and Conditioning, Human Kinetics, P.O. Box
5076, Champaign, USA.

COURSE OUTCOMES:

1. To Interpret and apply scientific knowledge and literature relating to strength training.
2. Understand the importance of organizations adminstration and leadership and their importance in the development of a safe and effective training programs.

MAPPING:

COURSE OUTCOME	PO1	PO2	PO3
1	3		3
2	3		3

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1	1	
2	1	

UEN18DE503 NUTRITIONAL ERGOGENIC AIDS AND EXERCISE PERFORMANCE

UNIT - I

Definition of ergogenic aids – Definition of dietary supplements – BMI – Antioxidants – self management education – Phytochemical rich foods – Anthocyanidins – ascorbic acid – Beta carotene – ellagic acid – Flavonols – Flavanones – Flavones – Isoflavons – Lutein – Lycopene – Organosulfur compounds .

UNIT - II

WADA-IOC- Doping agency – Doping in sports – Blood Doping in sports – Effects of Blood Doping – Erythropoietin – Effect of Exogenous administration of erythropoietin – Banned supplements in sports and Androstenedione – Dehydroepiandrosterone (DHEEA) – 19 –nonandrostenedione and 19 norandrostenediol – Ephedrine.

UNIT –III

Dietary Supplements that may perform as claimed – Betahydroxymethylbutyrate – Ribose – Carnitine – Chromium picolinate.

UNIT - IV

Pharmacological acids – Amphetamines – Anabolic steroids – Betahydroxymethybutyrate – creatine – caffeine – carnitine – chromium piclinate – Dehydroepiandrosterone (DHEA) – Human growth hormone (HGH).

UNIT- V

Harmful and Illegal Pharmacological Ergogenic aids – Anabolic and other steroids – Ephedrine – Blood Doping –Definition of Nutritional aids – caffeine – creatine – sodium bicarbonate.

REFERENCES:

1. Bell., D., Jacobs, I., and Zameenik J. (1998), effects of caffine, ephedrine and their combination on time to exhaustion during high intensity exercise. Europeon Journal of Applied Physiology, 427-433..
2. Website http / www. Webmd.com/ fitness-exercise/humangrowth- hormone hgh.
3. Jerry E. Graham and Lawrence L. Sprite (1996), Caffeine and Exercise performance. Gastorade Sports science Institute,9(i) Retrieved from http./www.gssiweb.org/Articles /Sse-60-caffeine and exercise performance.
4. Pharmochological ergogenic aids(n.d.) Retrieved Nov.30,2015 from http/www.getfit.net/body/ physiology/ ergogenic/ pharmachological.htm.
5. Whitney.E. and Rolfes, S. 2013. Supplements as Ergogenic aids, understanding nutrition (14thed), Belmont, CA; Thomson/ Wadsworth.

COURSE OUTCOMES:

1. Gain in depth knowledge on one nutritional ergogenic aids.
2. To evaluate an athlete's diet and make valuable nutritional recommendations that will impact his/ her sports performance.

MAPPING:

COURSE OUTCOME	PO1	PO2	PO3
1	3		
2	3		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1	3	3
2	3	3

UEN18DE504 WEIGHT MANAGEMENT

Unit - I

Metabolism and Weight loss : Factors that Influence Metabolism – Basal Metabolic Rate and Methods For Measuring BMR - How Metabolism Affects Weight - How to Increase the Metabolism - Relationship between
Metabolism and Caloric Intake

UNIT - II

Nutrients: Ingestion to Energy Metabolism: Carbohydrates, Protein, Fat – Meaning, Classification and its Functions. Role of Carbohydrates, Fat and Protein during Exercise. Vitamins, Minerals, Water: Meaning, Classification and its Function. Role of Hydration during Exercise, Water Balance.

UNIT - III

Weight Management: Meaning, Concept of Weight Management in theModern Era – Factors affecting Weight Management and Values of Weight Management - Maintaining a Healthy Life Style - Barriers to Lifestyle Changes - Body Mass Index (BMI)

UNIT - IV

Planning of Weight Management: Determination of Desirable Body Weight – Daily Caloric Intake and Expenditure – Balanced Diet for Indian School Children – Weight Management Programme for Sporty Children – Role of Diet and Exercise in Weight Management – Diet Plan and Exercise Schedule for Weight Gain and Loss.

UNIT - V

Obesity: Meaning – Definition – Types – Causes and Solution for overcoming Obesity. Myths of Spot Reduction and Weight Loss – Dieting and Exercise for Weight Control - Weight Management for Special Populations - Pregnant and Postpartum Women - Weight Management for Seniors - Weight Management for Persons with Disabilities

REFERENCES:

1. Wadden TA, Stunkard AJ (Eds.). Handbook of obesity treatment. New York: The Guilford Press, 2004.
2. Fairburn CG, Brownell KD (Eds.). Eating disorders and obesity: A comprehensive handbook (2nd ed.). New York: The Guilford Press, 2002.
3. Hill JO. Understanding and addressing the epidemic of obesity: An energy balance perspective. Endocrine Reviews 2006;27(7):750-761.
4. Wardlaw, Smith. Contemporary Nutrition: A Functional Approach. 2nd ed: 2012. McGraw Hill. 7. Williams, Melvin. Nutrition for health, fitness and sports. 2004. McGraw Hill
5. Joshi, A.S. Nutrition and Dietetics. 2010. Tata McGraw Hill.

COURSE OUTCOME:

1. Gain an understanding of the basic elements of nutrition with a focus on the key nutrients in order to avoid deficiencies when working with weight loss clients
2. Develop the confidence to be able to make informed choices from a wide span of weight loss options and avoid the use of rigidly fixed methods, thereby delivering programmes best suited to individual needs
3. Learn the skills to be able to counsel on a one-to-one basis. We believe that this favours the resolution of individual circumstances and problems

Receive the training to see your clients through every stage of the process, thereby maximizing their chances of success.

MAPPING:

Course Outcome	PO1	PO2	PO3
1	3		3
2	3		3
3	3		3

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1	1	
2	1	
3	1	

UEN18DE505 FITNESS AND NUTRITIONFOR GERIATRIC

UNIT - I

Definition of Geriatric –physical changes with aging – physical health – How to make aging well a reality – general characteristics of aging process – theories of aging – how aging affects fitness.

UNIT - II

Physiological changes in aging – muscle tissue – muscle strength – power – balance – cardiorespiratory fitness – aging and cardiorespiratory system.

UNIT - III

Aging and Nervous system – Aging and respiratory system – aging and gastrointestinal system – aging and urinary system – aging and endocrine system.

UNIT - IV

Different exercise – strength training – endurance exercise – stretching/ flexibility exercise to develop physical fitness and for sports.

UNIT - V

Nutritional risk for older adults – Screening for nutritional status – geriatric nutritional requirements – calorie need – nutrient needs – nutritional need for older athletes – Macro and micronutrients.

REFERENCE:

1. Kathleen.c. Niedert, Nutrition care of the older adult, a handbook for nutrition throughout the continuum of care; third exition.
2. Ronni Chertoff, Geriatric Nutrition: The health professionals hand book; 4th edition.

COURSE OUTCOMES:

1. Provide individual advice and guidance in the area of Geriatric sports.
2. Provide individual advice and guidance in the area of Geriatric nutrition. Design and run a group consultation for Master athletes about geriatric sports and nutrition.

MAPPING:

Course Outcome	PO1	PO2	PO3
1	3		
2	3		

MAPPING (CO's and PSO's)

Course Outcomes	Program Specific Outcomes (PSO)	
(CO)		
1	2	2
2	2	2

UEN18DE506 FLOOR AND STEP AEROBICS

UNIT - I

Aerobics - Benefits of Aerobics – Wellness –Music – Music understanding- music tempo variation – cueing – Use of floor, mirror – shoes – stepper –various height

UNIT - II

Warm Up – cardio workout - Low Intensity – high intensity - Cool Down – Flexibility – Posture – Duration – Heart rate – use of boarg scale (10 points) - Peak Maximal Heart Rate (MHR) Method-Ratings of Perceived Exertion Method-Talk Test Method.

UNIT - III

Rhythmic Aerobics: Variations and Styles – floor aerobics – Marching – Step touch – L- step – V- step – Diamond – Knee lift – Touch out – Grape vine –Turn step – chacha – A – step – arm variation - Combination of various steps**UNIT – IV** Step Aerobics – Marching – up and down - L- step – V- step – Straddle – Cross over – Turn step – Knee lift – Hop – Jump – Run Run – Arm Variation – Combination of various steps

UNIT - V

Major muscle groups strengthening –circuit training and interval training - Body Toning through Resistance; Weights, Bands and Resistance;

REFERENCE BOOKS:

1. Mazzeo, K.S.(2001). Fitness through aerobics and step training. Brooks/cole publishing Company
2. Kennedy – Ambrushter, C.,& Yoke, M.(2014). Methods of group exercise instruction. Human Kinetics
3. Cooper Kenneth H.2013, Aerobic program for total well being: Exercise Diet and Emotional Balance. Bantam.

COURSE OUTCOME:

1. Demonstrate the ability to perform aerobic movements in various combination and forms.
2. Understand and apply the knowledge of basic choreography, music selection and effective group management.
3. Identify the major muscle groups and their application to aerobics.

MAPPING:

COURSE OUTCOME	PO 1	PO 2	PO 3
1	3		3
2	3		3
3	3		3

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1	1	
2	1	
3	1	

UEN18DE601 FIRST AID AND SPORTS INJURY & PHYSIOTHERAPY

UNIT - I

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, and chronic. Advantages and Disadvantages of PRICER therapy, Aquatic therapy.

UNIT - II

Principles of injury prevention – warm – up & cool down – stretching – static, dynamic, ballistic, PNF stretching – protective equipments& shoes. Principles of rehabilitation – muscle conditioning – flexibility – proprioceptive sports skills – cardiovascular fitness – progression & stages of rehabilitation – return to sports.

UNIT - III

First Aid: Definition – Principles – First aid Kit. First Aid for Bleeding, Epilepsy, Shock, Drowning, Heart attack, Heat stroke, Snake bite. Types of Dressing and bandages- Cardio Pulmonary Resuscitation.

UNIT - IV

Sports Injury: Meaning and Definition – Prevention of sports injuries – classification of injuries. Open injuries: Abrasion, Laceration, Incision, Puncture, Avulsion. Closed injuries: Sprain, strain, subluxation, dislocation, fracture, contusion, Muscle cramp; its first aid and treatments.

UNIT - V

Physiotherapy: Definition and Guiding principles. Hydrotherapy: Cryotherapy, Ice pack, Ice wrap, Ice massage, Ice towel. Thermo therapy: - Hot bag, Contrast bath, Whirlpool bath. Electro therapy: Short wave diathermy, Infrared therapy, Ultrasound therapy. Wax therapy, Traction Unit. Massage: Definition, Physiological effects – Classification of massage -Swedish system.

REFERNCES BOOKS:

1. Christopher M. (1993). Norris Sports Injuries Diagnosis and Management for Physiotherapists, East Kilbride: Thomson Litho Ltd.
2. ClearеMaxwell.,& Hudson. (1998). The Complete Book of Massage. London: Dorling Kindersley Ltd.
3. James, A. Gould.,& George J. Davies. (1985). Physical Therapy. Toronto: C.V. Mosby Company.
4. Morris, B. Mellin (1989). Sports Injuries and Athletic Problems. New Delhi: Surjeet Publication.
5. Steven Roy.,& Richard Irvin. (1983). Sports Medicine. New Jersey: Prentice-Hall Inc.
6. The Encyclopedia of Sports Medicine. (1998). The Olympic Book of Sports Medicine. Australia: Tittel Blackwell scientific publications.

COURSE OUTCOMES:

1. To know and understand the science, methods, techniques and instruments on which physiotherapy is based.
2. To know and understand the methods, procedures and actions expected in clinical contexts, as well as to employ physiotherapy as an educational tool for promoting and maintaining health.
3. To participate in the areas of the promotion, prevention, protection and recovery of health.
4. To learn in the development of physiotherapy protocols based on scientific evidence that promote research in physiotherapy.
5. To understand the importance of upgrading knowledge, skills and attitudes Familiarise themselves with First Aid regulations of 2002
6. Be aware of the duties of the students as to First Aid
7. Manage an unresponsive casualty who is breathing normally
8. Manage and unresponsive casualty who is not breathing normally
9. Understand how to manage a variety of conditions.

MAPPING:

Course Outcome	PO1	PO2	PO3
1	3		
2	3		
3	3		
4	3		
5	3		
6	3		
7	3		
8	3		
9	3		

MAPPING (CO's and PSO's)

Course Outcome(CO)	Program Specific Outcomes (PSO)		
1	3		
2	3		
3	3		
4	3		
5	3		
6	3		
7	3		
8	3		
9	3		

UEN18DE602 OCCUPATIONAL AND FUNCTIONAL ASSESSMENT

UNIT – I

Occupational assessment – clinical assessment – early intervention and counselling – Job analysis – Traditional exercise testing – simulated work testing – on the job monitoring.

UNIT – II

Early rehabilitation – disability – new employment- non vocational activity – influence of environmental conditions- heat stress – cold stress – altitude – pollutants.

UNIT – III

History of Resistance training – Basic principles of resistance training – metabolic demands – biomechanical actions – injury potential.

UNIT – IV

Acute program variables – choice of exercises – order of exercises split routines – number of sets – intensity of exercise – rest between sets and exercises.

UNIT – V

Chronic programming – periodization of Training – linear and non linearperiadization – basic techniques in resistance training – breathing – full range of movement – movement speed – warm up- machine and free weight exercises- equipment – Flexibility training – types of flexibility – static- ballistic – dynamic – proprioceptive Neuromuscular Facilitation Techniques.

REFERENCE BOOKS

1. ACSM (2014) ACSM's Resource Manual for exercise testing and prescription – Lippincott Williams and Wilkins
2. Kraemer WJ. Ratamess NA. Fundamentals of resistance training: progression and exercise prescription. Med Sci Sports Exerc, 2004: 36(4); 674-88.
3. American College of Sports Medicine, American College of Sports Medicine position stand. Progression models in resistance training for healthy adults, Med Sci Sports Exerc. 2009: 41(3): 687-708.

COURSE OUTCOMES:

1. Students will able to design individual nutritional plan for old person based on prioritized problems and goals, justified intervention and outcome measures and within a specific time frame.

MAPPING:

COURSE OUTCOME	PO1	PO2	PO3
1	3		
2	3		
3	3		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1	2	
2	2	
3	2	

UEN18DE603 SPORTS BIOMECHANICS

UNIT-I

Definition and meaning of Biomechanics –Sports Biomechanics- Scope – Need and importance of biomechanics- historical development of sports biomechanics- Role of biomechanics in sports

UNIT-II

Definition of Forces- Classifying Forces:Internal Forces-External Forces- Friction-Equilibrium – Types of Equilibrium – linear kinematics – acceleration and projectile motion.

UNIT-III

Newton's Laws of Motion – First of Law of Inertia, Second Law of Acceleration and Third Law of Action Reaction – Linear Motion – Angular Motion – General Motion – angular linear velocity – angular acceleration – anatomical system for describing limb movements.

UNIT-IV

Meaning of stress and strain – stress and strain of the body – types of stress and strain – types of strain – mechanical properties of stress and strain relationship.

UNIT-V

Bio-mechanical analysis – mechanical properties of stress and injury – tissue responses to injury – mechanism of over injury – individual differences tissue threshold – intrinsic and extrinsic factors affecting injury.

Reference:

1. Peter. M. Mcgimis, (2005), Biomechanics of sports and exercise", Human Kinetics.
2. Susan J. Hall, Mc Grow Hill, (2003), Basic Biomechanics". Dr.A.K.Uppal, V. Lawrence Gray Kumar, Mamatamanjari panda, "Bio mechanics in physical education and exercise science", Friends publications

LEARNING OUTCOME:

1. To enable the students to learn the basic concepts of Biomechanics.

MAPPING:

Course Outcome	PO1	PO2	PO3
1	3		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
1	3	

UEN18DE604 NUTRITION AND IMMUNE FUNCTION IN ATHLETES

UNIT – I

Immune system – Functions of the immune system- Components – Leukocytes – Types of Neutrophils – Eosinophils – Bosophils – Monocytes - Lymphocytes - function and characteristic

UNIT – II

Immune response – mechanism of general response – Clonal selection and immunological memory – cellular immune response – Humoral fluid response – Antigen – Antibody reactions – Complement – Disorders of the immune mechanism

UNIT – III

Effect of exercise on the immune system – Acute effect of exercise on immune function – Chronic effect of exercise on immune function – Guidelines for the athlete to reduce the risk of infection – nutritional counter and measures.

UNIT – IV

Nutritional Manipulation - immune depression in athletes – nutritional influence on immune function in athletes –Role of carbohydrate, protein and fat in immune function – pre and post exercise

UNIT – V

Immune function and nutrition of elite athletes –Nutritional influence – role of vitamins and minerals in immune function – Effect of Dietary deficiency and excess - Dietary Sources – RDA – Fluid Concentration

REFERENCE BOOKS:

1. Asker Jeukendrup and Michael Gleeson (2004) “Sports nutrition” Human Kinetics, inc
2. Nieman, D.C., and B.K. Pederson (2000) “Nutrition and Exercise Immunology”. CRC press: Boca Raton, FL.
3. Journal of sports sciences ISSN 0264 – 04147x online copyright 2004 Taylor & Francis Ltd

LEARNING OBJECTIVES:

1. Students will apply the concept of nutritional intervention to immune system of the athlete in various sports.
2. They will also insist the athlete to maintain the IMMUNE system for better performance.

MAPPING:

COURSE OUTCOME	PO1	PO2	PO3
1	3	3	
2	3	3	

MAPPING (CO’s and PSO’s)

Course Outcomes (CO)	Program Specific Outcomes (PSO)		
1	1	1	
2	1	1	

UEN18DE605 FITNESS AND WELLNESS

UNIT – I

Definition and Meaning of Physical Fitness- Strategies for increasing Physical Fitness in India - Values of Physical Fitness -Components of Health Related Physical Fitness and performance related Physical Fitness - Definition and components of wellness – Relationship between fitness, health and Wellness.

UNIT – II

Factors influencing Fitness Age – Sex-Climate-Diet-Exercise and Training - Types of Exercises used in Fitness (Aerobic, Anaerobic, Isometric, Stretching, Agility and Balancing). Health benefits of Physical Activity - Assessment of Cardio-respiratory Fitness, Musculoskeletal Fitness, Flexibility and Body Composition.

UNIT – III

Prescription for aerobic exercise - Modes of aerobic exercise - Implementing an aerobic fitness programme - Principles of cardiovascular exercise prescription - Aerobic exercise programmes (walk-jog-run) aerobic dancing, rope jumping, treadmill running, jogging in place, stair climbing, stationary bicycling.

UNIT – IV

Prescription for Flexibility - Principles of flexibility Exercise - Types of Flexibility and methods of training - Flexibility exercise for the low back, round shoulders, joggers, runners and various muscles or upper and lower extremities.

UNIT – V

Resistance Training Meaning - Benefits of resistance training - Terminology used in resistance training - sets, resistance (Load), repetitions maximum - Principles of exercise prescription the threshold - over load, specificity, reversibility, and Progression - warm-up - cooldown.

REFERENCE BOOKS:

1. Franks Don B. et.al (1999), “The Health Fitness Handbook”, Human Kinetics.
2. Lindsey Ruth, Corbin B.Charles (2007), “Fitness for Life”, Human Kinetics.
3. Pollock,Michael.et.al(1998), “Health and Fitness Through Physical Activity”, New York: McGrew Hill Book Company.
4. Williams H. Melvin (1995), “Life time Fitness and Wellness”, Brown Publications, Dubugue.
5. Siedentop Daryl, 1994 “Introduction to Physical Education Fitness and Sport”, Mayfield Publishing Company, Mountain view, California.
6. Batman P. and Van Capelle M. (1995) “The Exercise Guide to Resistance Training”, FITAU Publications, Australia.

COURSE OUTCOMES:

1. Students will be able to explain the process to become physically fit. They will also understand how food affects your personal wellbeing and learn how to make smart choices. They will demonstrate this through personal journal keeping, class assignments, group projects, physical activities, quizzes and physical tests.
2. To define how becoming fit and leading a healthy lifestyle will improve the quality of life both mentally and physically.
3. Students will be able to explain how the way they live their life will affect the quality of life they lead.

4. They will demonstrate this through personal journal keeping, class assignments, group projects, physical activities, quizzes and physical tests.
5. Develop a personal fitness routine.

MAPPING:

COURSE OUTCOME	PO1	PO2	PO3
1	3	2	
2	3		
3	3		
4	3		
5	3		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)		
1	1		
2	1		
3	1		
4	1		
5	1		

UEN18DE606 STABILITY AND CORE TRAINING

UNIT – I

Science of Core stability – Tolerance and capacity –core function anatomy –anterior core muscle – posterior core muscletherapeutic/ corrective exercise – Injury prevention program reducing risk of injury

UNIT – II

Abdomen Revolution - components of Abdomen Revolution – back disorders - Back pain - Swayback and Facet Pain -Stenosis -Flat Back - Disc Pain – Spondylolisthesis- Mystery pain – flat belly and Abdomen revolution – osteoporosis and Abdomen exercise – Isometric Abdomen drill

UNIT – III

Spine organization –Posture control – Breathing – Diaphragm breathing –Lateral breathing – Activation – Mobilization - core stability – positions - core strength – power development

UNIT – IV

Designing core strengthening programme – Core strength and endurance training for performance – without equipment – with equipment (Swiss ball and Medicine ball) – Functional Training

UNIT – V

Stabilization progression - Hook-lying – hands and knees – face down – Bridging – Plank – sports specific.

REFERENCE BOOKS:

1. Brumitt, J. (2010) core assessment and training. Human Kinetics
2. Paul Collins (2009) "Core Strength" Sports publishers Association
3. Jeffrey M. Willlardson (2014) "Develop the core" Human Kinetics
4. www.nsca.com/PDF/coretraining

COURSE OUTCOMES:

1. Apply the core principles to exercise on a large stability cushion
2. Understand how the unstable nature of the cushion challenges stability.
3. Discover how to include proprioceptive challenge into any workout.

MAPPING:

COURSE OUTCOME	PO1	PO2	PO3
1	3	3	
2	3	3	
3	3	3	

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)		
1	1		
2	1		
3	1		

UEN18SE501 ELEMENTARY STATISTICS IN EXERCISE PHYSIOLOGY & NUTRITION

Unit 1

Meaning and definition of Statistics, Raw Score ,Attribute, Variable – Type of Variable , Data – Type of Data , Population , sample, Parameter , Statistic , Frequency distribution , Construction of frequency distribution.

Unit 2- Measures of Central tendency

Meaning, Types of Central tendency – Mean, Median, Mode – Calculation, Merits and Demerits of Central tendency.

Unit 3 – Measures of Variability

Meaning, Types of Variability – Range, Mean deviation, Quartile deviation and Standard deviation – Calculation.Merits and demerits of Variability.

Unit 4 – Graphs

Graphical representation in Statistics Line diagram, Bar diagram, Histogram, Frequency curve, Frequency Polygon, Ogive curve, Pie diagram. Advantages of graphs.

Unit 5 – Applications of Statistics

Meaning of Correlation , Pearson product moment correlation , Rank order correlation , Chi – square test , Independent of attribute , Equal Occurance test , Additive Properties Test of significance – Hypothesis , Types of Error , Acceptance region , Rejection region , Level of Significance , 't' test – Independent and Dependent 't' test.

REFERNCES

1. Blum, J.R., and Fattu, N.A. 1954. Nonparametric methods.Rev.Educ.Res., 24, 467-487.
2. Conover, W.J. Practical Nonparametric statistics, 2nd edition. New York; John wiley& sons, 1980.
3. Gibbons,J.D., and Chakraborti. S., Nonparametric Statistical Inference, 3d ed., New York, Marcel Dekker. 1992.
4. Kraft, Charles H. and Van Eeden. Constance A Nonparametric Introduction to Statistics. New York: Macmillian, 1968.
5. Owen, D.B. Handbook of Statiscal Tables. Reading, Mass; Addison- Wesley, 1962.
6. Siegel, Sidney. Nonparametric statistics for the behavioral Sciences. New York : McGraw-Hill, 1956.
7. VarmaJ.Prakash ; Sports Statistics Copyright 2000 by Venus Publication.

COURSE OBJECTIVES

After completing this subject we will be able to understand about

1. The basic concepts of Statistics
2. Need of Statistics
3. How to analysis the problem using statistics tools

MAPPING:

COURSE OUTCOME	PO1	PO2	PO3
1	3		
2	3		
3	3		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)		
1	2	2	
2	2	2	
3	2	2	

PEN18CT202 TRAINING AND COMPETITION NUTRITION

Unit I:

Sport Nutrition -Assessment of nutritional status: Three Day Food Record – Seven Day Food Record – 24 Hours Recall – Food Frequency- Diet History - Carbohydrate Diets for training – Muscle Glycogen - Liver Glycogen - Regulation of Glucose Concentration – Hypoglycemia - Carbohydrates Ingestion before Exercise - Carbohydrates Maintenance During exercise- Carbohydrates Replenishment Alter Exercise - Glycemic load – Carbohydrates loading.

Unit II:

Biology of protein and amino acid requirements: Body protein mass-Protein synthesis, degradation, and turnover- Protein Utilization in Athletic Performance- Protein requirements for Endurance Athletes –Protein requirements for Strength Athletes – Protein essential for before exercise, during exercise and in recovery from exercise - Benefits and Risks of a High-Protein Diet- Nitrogen Balance.

Unit III:

Weight management – Methods used to determined weight status: Body mass index – Waist-to-hip ratio - Body Composition and Performance - Changes in Body Composition -Methods for measuring body composition: Hydrostatic weighing - Bioelectric Impedance Analysis - Dual Energy X-ray Absorptiometry (DEXA) - Skin fold Thickness -Principles of healthy weight reduction- Making weight for weight category sports - Principles of healthy weight gain.

Unit IV:

Composition of Body Fluids: Intracellular Fluid - Extracellular Fluid - Fluid guidelines - Fluid need before exercise - Fluid need during exercise - Fluid need after exercise, Dehydration - Effects of dehydration and overhydration - Heat cramps, Sports drinks - Types of sports drinks - Energy drinks, Fluid and Electrolyte Management- Strategies to delay fatigue- Effects of hyperthermia and dehydration on performance.

Unit V:

Planning Diets: Principles of Planning Diets - Steps involved in Planning a Diets - Dietary guidelines for Eating Right - Food Guide Pyramid - Healthy Eating Pyramid - Planning Diets for aerobic and anaerobic sports - Planning Diets for Intermittent sports - Planning Diets for the traveling athlete - Planning diets for a vegetarian athlete.

COURSE OUTCOMES:

1. To impart knowledge on sports specific nutrition and hydration guidelines- in power/strength, weight class-combat and racket sport athletes.

2. To help students understand the role or ergogenic aids- their dose, safety and efficacy to enhance sports performance

COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6
1	3	3	3	3	3	3
2	3	3	3	3	3	3

PEN18CT103 ADVANCED HUMAN NUTRITION

UNIT – I

Structural features of Carbohydrates –Classification of carbohydrates: Simple Carbohydrates: Monosaccharide – Disaccharides – Complex Carbohydrates: Oligosaccharides – Polysaccharides – Digestion: Digestion of Polysaccharides - Digestion of Disaccharides – Absorption of Glucose and Galactose- Absorption of Fructose - Monosaccharide Transport and cellular Uptake- Glucose Transporter-Maintenance of Blood Glucose level – Glycemic response to carbohydrates: Glycemic Index - Glycemic Load.

UNIT - II

Proteins – Functional Categories: Catalysts- Messengers-structural elements- Immunoprotectors –Transporters - Buffers - Fluid balance - Other role-Protein Digestion and Absorption - Amino acids: Essential amino acids and Non-essential amino acids - Kinds of Proteins: Complete Proteins and Incomplete Proteins – Functions of Proteins in the body - Nitrogen Balance.

UNIT - III

Lipids - Kinds of Lipids: Simple Lipids: Fatty acids-Saturated fatty acids- Unsaturated fatty acids and Trans Fatty Acid - Essential Fatty acids: Linoleic acid (an omega-6 fatty acid) and linoleic acid (an omega-3 fatty acid) and Non-essential Fatty acids (omega-9 fatty acid) –Triglyceride – Sterols - Compound Lipids: Phospholipids – Glycolipids-Lipoproteins Derived Lipids: Cholesterol- Functions of Cholesterol - Total Cholesterol - High density lipoproteins - Low Density Lipoproteins-Lipids Digestion and Absorption.

UNIT - IV

Vitamins - Classification of vitamins: Fat soluble vitamins - A (Carotenoids), D, E and vitamins K - Water soluble vitamins: Vitamin C (Ascorbic Acid) and B complex group: Thiamine (Vitamins B_1)-Riboflavin (Vitamins B_2) - Niacin (Vitamins B_3)- Pantothenic Acid -Biotin - Folate - Vitamins B_{12}

(Cobalamin). Vitamins B_6 - Absorption, Transport and storage- Functions and mechanisms of action – Interaction with other Nutrients - Dietary sources - Recommended Dietary allowances (RDA)- Deficiency.

UNIT - V

Minerals: Classification of Minerals: Macro minerals and Micro minerals: Calcium – Phosphorus – Magnesium- Sodium- Potassium- Chloride- Iron- Zinc- Copper- Selenium Iodine- Manganese - Absorption, Transport and storage- Functions and mechanisms of action – Interaction with other Nutrients - Dietary sources - Recommended Dietary allowances (RDA)-Deficiency.

COURSE OUTCOMES:

1. It will be the physical and biological science foundation of the dietetics profession.

COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6
1	3	3	3	3	3	3

PEN18CT201 NEURO PHYSIOLOGY

UNIT – I

Definition of Neurophysiology – structure and functions of neuron – degeneration and regeneration – receptors – reflex – Action potential – Depolarization – Repolarization – Synapse- Synaptic transmission – Neurotransmitters.

UNIT - II

Cutaneous and deep visceral sensation – Ascending and Descending tracts of spinal cord- Motor unit – organization of motor and sensory functions of CNS and Spinal cord – functions of Brain stem – cerebellum– Basal Ganglia - Hypothalamus – Thalamus- cerebral cortex.

UNIT - III

Higher function of Brain – Arousal – sleep , learning memory, speech – EEG – conditioned reflex – neural basis for instinctual and Behavior emotion – control of posture – equilibrium – muscle tone.

UNIT - IV

Diencephalon function – Hypothalamus and body's Homeostasis- the control of body temperature – appetite – defecation – micturition - heart rate-Sleeping- arterial Blood Pressure – Anterolateral system conducting afferent pain and temperature interacts with the thalamus.

UNIT – V

Brain imaging techniques – CT (Computerised Tomography) – MRI (Magnetic Resonance Image) - Use of CT and MRI for identifying deep brain structure, acute pain, hemorrhage, tumors, and edema. Effect of Exercise on Nervous System

COURSE OUTCOMES:

1. To interpret the knowledge of Neurophysiology in athletes and in special population.

COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6
1	3	2	1	2		1

EXERCISE BIO-CHEMISTRY

UNIT – I

Biochemistry – Definition and Importance. Composition of plasma. Energy and Calorie (Kilocalorie) – Definition Free Energy- Definition and its units. Mitochondria- Structure and function. ATP, ADP, AMP and Creatine Phosphaste-Definition and its formation and breakdown. Role of Oxygen in Energy metabolism. Catabolism and Anabolism–Definition and its Process.

UNIT – II

Central Role of Glucose in Carbohydrate Metabolism. Transport of Glucose Through the Cell Membrane. Glycogenesis—The Process of Glycogen Formation. Glycogenolysis-Removal of Stored Glycogen. Role of Insulin, Epinephrine and Glucagon in glucose transport and metabolism. Glycolysis and the Formation of Pyruvic Acid. Citric Acid Cycle (Krebs cycle). Formation of ATP by Oxidation of Hydrogen (Oxidative Phosphorylation).Anaerobic Glycolysis (CORI Cycle).Pentose Phosphate Pathway (Phosphogluconate Pathway).Gluconeogenesis. Role of Carbohydrate (Breakdown of Glucose) In Energy Metabolism.

UNIT – III

Lipid - Basic Chemical Structure of Triglycerides. Lipoproteins- Classification, Importance, Functions and normal values. Absorption and Transport of Lipids. Fat Deposit inadipocytes. Triglycerides for Energy.Hydrolysis of Triglycerides. Degradation of Fatty Acids to Acetyl Co A by Beta-Oxidation and Oxidation of Acetyl-Co A.ATP Formation by Oxidation of Fatty Acids. Formation of Acetoacetic Acid in the Liver and Its Transport in the Blood. Synthesis of Triglycerides from Carbohydrates. Conversion of Acetyl-CoA into Fatty Acids. Combination of Fatty Acids with a-Glycerophosphate to Form Triglycerides. Importance of Fat Synthesis and Storage.Hormonal Regulation of Fat Utilization. Formation and Uses of Phospholipids. Formation and Uses of Cholesterol. Factors That Affect Plasma Cholesterol Concentration—Feedback Control of Body Cholesterol

UNIT – IV

Basic Chemical Structure of Amino Acids. Transport and Storage of Amino Acids.Functional Roles of the Plasma Proteins. Essential and Nonessential Amino Acids. Use of Proteins for Energy-Deamination, Urea Formation by the Liver and Oxidation of Deaminated Amino Acids Ketogenesis-Definition. Hormonal Regulation of Protein Metabolism. Effect of Starvation on Protein Degradation.

UNIT – V

Acid-base balance. Hydrogen Ion and PH. Causes of Alteration in Acid-Base Balance-Volatile acids and Non-volatile acids. Regulation of Acid-Base Balance by Acid-Base Buffer System- Mechanism and Importance of Bicarbonate buffer system, Phosphate buffer system and Protein buffer system Regulation of Acid-Base Balance by Respiratory Mechanism. Regulation of Acid-Base Balance by Renal Mechanism. Acidosis and Alkalosis-Definition, Types(Respiratory and Metabolic) and its causes.

COURSE OUTCOMES:

1. To demonstrate technical meaning of fundamental Laboratory Skill, use proper laboratory safely in practices and demonstrate proficiency in using computers to solve chemical problems
2. To demonstrate effective scientific communication skill – both written and oral, students will able to write report and present the result of their own scientific works or the other work.

COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6
1	3					3
2	3					3

RENAL PHYSIOLOGY

UNIT I:

Physiological Anatomy of the Kidney-Structure of the kidney.Cortex.Medulla. – Nephron-functional unit of the kidney. Cortical and juxtamedullary nephrons. – Anatomy of the nephron. Glomerulus.Tubule. – Bowman_s capsule. Proximal tubule.Loop of Henle.Distal tubule.Collecting duct. – Kidney blood vessels. Afferent and efferent arterioles.Peritubullar capillary network.Vasa recta.Juxtaglomerular apparatus. - Principles of urine formation.

UNITE II:

Glomerular Filtration.Glomerular filtration membrane. - Net filtration pressure. – Glomerular filtrate. Composition.Glomerular filtration rate. – Clearance. Definition.Calculation.Inulin clearance.Creatinine clearance. PAH clearance. – Renal plasma flow. Filtration fraction. – Physiological control of glomerular filtration and renal blood flow. Nervous regulation.Humoral regulation.Autoregulation.Tubuloglomerular feedback.Myogenic autoregulation.

UNIT III:

Excretion of Water.Reabsorption of water in tubular segments. – Excreting excess water by forming a dilute urine. – Conserving water by excreting a concentrated urine. Obligatory urine volume.Osmotic stratification of renal medulla.Countercurrent multiplier system (loop of Henle).Role of distal tubule and collecting duct.Contribution of urea.Recirculation of urea.Countercurrent exchange system (vasa recta). - Mechanism of water reabsorption. Role of antidiuretic hormone (ADH).Diabetes insipidus. – Water diuresis. Osmotic diuresis.

UNIT IV:

Excretion of Sodium, Chloride, Potassium and Other Ions.Reabsorption of sodium in tubular segments.Mechanisms of sodium reabsorption.Reabsorption of sodium in late distal tubule and in collecting duct.Role of aldosterone. – Excretion of potassium. Reabsorption of potassium.Secretion of potassium.Principal cells.Intercalated cells. Regulation of potassium secretion.– Excretion of chloride. – Excretion of calcium. Regulation of calcium reabsorption. – Excretion of phosphate. - Excretion of magnesium.

UNIT V:

Acid-Base Balance and Kidney.Plasmatic pH.Acidosis, alkalosis.Sources of hydrogen ions. - Acid-base buffer systems. Bicarbonate buffer system. – The role of kidney in the acid-base regulation. Secretion of hydrogen ions.Filtration and reabsorption of bicarbonate ions.Generation of new bicarbonate ions. – Renal response to acidosis. Tubular buffers. The role of ammonium ion an ammonia.Renal response to alkalosis. – Respiratory acidosis and alkalosis. Metabolic acidosis and alkalosis.Micturition. Ureter Ureterorenal reflex. – Bladder. Detrusor muscle.Innervationofthebladder.Internalsphincter.Externalsphincter.

COURSE OUTCOMES:

1. Students will be able to present individual research papers.
2. Students will be able to develop and in depth understanding if the kidney physiology.

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3					3
2	3					3

PEN18CT301 ENVIRONMENTAL PHYSIOLOGY

UNIT – I

Definition of Homeostasis, thermoregulation, metabolism – heat stress – Fundamental principles involved in thermoregulation – Conduction – Convection - - Radiation – Evaporation – Hypothalamus and heat losing mechanism- role of endocrine glands in regulating body temperature – temperature regulation during exercise .

UNIT - II

Temperature regulation in hot environment – Acclimatization to heat – sweating–increased plasma volume – increased stroke volume – improved cutaneous blood flow – heat exhaustion – heat cramps – heat stroke - precaution to be taken in hot environment–- precaution to be taken to avoid heat illness- Temperature regulation in cold environment – acclimatization to cold – fine motor activity – fecilitation of metabolic heat production - precaution to be taken in cold environment.

UNIT - III

The environmental differences between High altitude and sea level – immediate physiological changes at high altitude - Acclimatization - in respiratory system – in cardiovascular system – long term adaptation - time of acclimatization – the importance of training at altitude- aerobic process – anaerobic process – performance at Altitude – Hypoxic training methods for improving endurance exerciseperformance.

UNIT – IV :

General characteristics of underwater environment – SCUBA diving – physiology of underwater diving – physiological response to water immersion –exposure – breath hold limitations – Ambient pressure changes – breathing under pressure – physiology of decompression.

UNIT - V

Factors affecting physiological performance – skeletal system – muscular system – cardiovascular system – respiratory system –Bio-energetic system – lactate tolerance – maximum aerobic capacity – hormonal difference.

COURSE OUTCOMES:

1. Students who successfully complete the paper will develop an understanding of the physiological adaptations that have evolved them to survive, adapt, participate and to train in various sports activities.

COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6
1	3	3	3		3	3

PEN18CT301 EXERCISE AND DIET PRESCRIPTION FOR SPECIAL POPULATION

UNIT – I

Definition of obesity - Prevalence of obesity - Factors that contribute to obesity- Assessment: Body mass index-Waist to Hip ratio (WHR) - Broka‘s Index-Types of obesity - Dietary Modification of obesity - Behavior Modification-Ill Effects of Obesity-Exercise Testing - Exercise prescription for obesity -Special Considerations-Recommended Weight Loss Programs.

UNIT - II

Definition of Diabetes Mellitus – Prevalence of Diabetes Mellitus – Etiology of Diabetes Mellitus – Types of Diabetes Mellitus – Signs and Symptoms - Diagnostic Tests-complications of Diabetes Mellitus – Healthy Approaches to Managing Diabetes: Focusing on Nutrition-Dietary Macronutrients -Fiber Intake-Carbohydrate Intake–Exercise Testing- Exercise and Diabetic Diet prescription for Diabetes Mellitus-Special Considerations.

UNIT - III

Definition of Hypertension - Prevalence of Hypertension - Etiology of Hypertension - Regulation of blood pressure-Causes of Hypertension- Classification of hypertension - complications of Hypertension - Prevention of Hypertension: Dietary Management -Sodium Restricted Diets-Exercise Testing-Exercise prescription for Hypertension -Special Considerations.

UNIT - IV

Definition of Coronary Heart Disease (CHD) - Prevalence and Risk factors of Coronary Heart Disease - Sign and symptoms of Coronary Heart Disease - Role of Fat in the Development of Atherosclerosis- Prevention of Coronary Heart Disease: Dietary Management - Heart- Healthy Diet

Plans-Heart-Healthy Dietary Recommendations- Inpatient Rehabilitation Programs - Outpatient Exercise Programs -Exercise Prescription without a Preliminary Exercise Test -Exercise prescription for Coronary Heart Disease

UNIT – V

Chronic Pulmonary Diseases - Chronic obstructive pulmonary disease –Types of Obstructive Pulmonary Disorders - Impairments and Impact on Function-Management Guidelines-Restrictive pulmonary disorders-Acute and Chronic Causes of Restrictive Pulmonary Disorders-Management Guidelines -Pulmonary function tests-Nutritional impact- Nutritional screening and nutritional assessment-Nutritional requirements-Breathing Exercises and Ventilatory Training-Guidelines for Teaching Breathing Exercises.

COURSE OUTCOMES:

1. To develop the Students will become expertise in exercise testing and prescription in Special populations.
2. The risks of exercise, pre-participation screening procedures and guidelines for exercise prescription are discussed.
3. The focus will be on Diet and aerobic/cardiovascular assessment and conditioning.
4. Students will become knowledgeable about laboratory and field testing techniques including the estimation of aerobic capacity, Strength and Flexibility and prescription of exercise through theoretical and laboratory learning.
5. Based on the disease specific mechanisms, evidence-based options for exercise interventions will be presented.

COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6
1	3		3	3	3	3
2	3					3
3	3					3
4	3					3
5	3					3

EXERCISE AND SPORTS FOR WOMEN

Unit I:

Structural and Physiological differences between male and female – Body size & Composition, strength, metabolic function, Bone mass – Muscle mass – Fat mass- Heart – Blood Volume – RBC and respiratory difference –Gonadal hormones and Sports performance.

Unit II:

Menstrual cycle – Physiology of menstrual cycle – Exercise during menstrual cycles – Female athletic triad: Disorder of Eating- Amenorrhea – osteoporosis, menstrual cycle and Physical performance.

Unit III:

Pregnancy – Physiological changes during pregnancy – Lactation – Indications and Contraindications to exercise during Pregnancy - Guidelines for exercise during and after pregnancy.

Unit IV:

Hormonal Disorders - Physiological changes – Pre menopause, Menopause and Post menopause - Osteoporosis and its pathophysiology due to lack of exercise – Effect of exercise to prevent Osteoporosis – Anemia – Iron supplements.

Unit V:

Mechanism of hormone action – Gonadal Hormones - Women and weight training – hormonal responses to exercise - Mascularization due to exercise, Hormonal effects on fluid and electrolyte balance during exercise – aldosterone – renin- ADH - Doping and performance – women participation in contact and non-contact sports.

COURSE OUTCOMES:

1. The ESS for women student is knowledgeable in the sub-disciplines of sports science and be able to adopt an inter-disciplinary approach to problem-solve practical situations related to exercise and sports for women. Through the study of the subject, he/she develops the analytical skills to observe, analyse and evaluate practical performance for improvement.

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3				3	3

EXERCISE PHYSIOLOGY

Unit- I

Structure and functions of heart- cardiac cycle- Blood pressure- cardiac output- Heart Rate- Stroke volume- Structure and Functions of respiratory system-Lung volumes and capacities- BMR- Regulation of body temperature- Physiological responses to Heat and Cold- Effect of exercise on cardiac respiration system.

Unit- II

Types of Muscles- Muscles fiber types- Mechanism of Muscles contraction- Sliding filament theory- structure of Neuron- central neurons- brain and spinal cord-peripheral neurons- Automatic Ns- Motor unit- Action potential- depolarisation- Reflex are- proprioceptors- Effect of Exercise on Muscular and Neuron System.

Unit- III

Energy Metabolism - ATP- PC System - Glycolytic and Oxidative system- Oxygen debt and deficit- Aerobic and anaerobic training and their effects on Aerobic and Anaerobic System.

Unit- IV

Structure and Secretion of Pituitary gland- Thyroid Gland- Liver- Adrenal Gland and pancreas- Structural and Physiological differences between Male and Female- Menstrual Cycle- Physiological changes during pregnancy- Guidelines for Exercise during and after pregnancy effect of exercise on Endocrine System.

Unit- V

Immunity- definition and classification- physiology of sleep- Cardiac rhythm- obesity- Exercise perception for obesity- Diabetes mellitus- Exercise Perception- Hyper tension- Exercise Perception- Coronary Heart Disease- Exercise Prescription- Pulmonary Disease- Exercise Prescription.

COURSE OUTCOMES:

1. Demonstrate the sound fundamental knowledge and understanding of the principles of Exercise physiology as they relate to responses and adaptations to physical activity and exercise.
2. Plan, administer, and evaluate wellness and fitness programs and exercise physiology tracks based in sport, clinical, industrial and corporate environment.
3. Demonstrate requisite skills and abilities for meaningful employment in Exercise Physiology related areas or pursue higher studies in the area of Exercise Physiology.

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3	3				3
2	3	3				3
3	3	3				3

HEALTH, FITNESS AND PERFORMANCE ASSESSMENT

UNIT – I

Preliminary Health Evaluation: Physical Activity Readiness Questionnaire (PARQ)- Medical History Questionnaire-Signs and Symptoms of Disease and Medical Clearance-Coronary Risk Factor Analysis-Disease Risk Classification-Lifestyle Evaluation-Informed Consent-Clinical Tests: Physical Examination-Blood Chemistry Profile- Resting Blood Pressure-Graded Exercise Test.

UNIT – II

Meaning and Definition of Blood Pressure, Heart Rate, and Electrocardiogram: Testing Procedures for Resting Blood Pressure Measurement - Auscultation-Palpation-Heart Rate Determination by Palpation –Electrocardiogram Recordings-Twelve-Lead Electrocardiogram- Electrocardiogram Basics- Resting 12-Lead Electrocardiogram Procedures.

UNIT – III

Meaning and Definition of Physical Fitness-Types of Physical Fitness: Health-related fitness and Skill-related fitness- Health-related fitness components: Cardiovascular Endurance-Muscular strength and Endurance–Flexibility-Body composition-Pretest Instructions-Tests Administration and Interpretation-Skill-related fitness: Power-Speed-Agility-Balance and Coordination-Reaction time- Pretest Instructions- Tests Administration and interpretation.

UNIT – IV

Basic Training Principles for Exercise Program Design: Principle of Specificity-Principle of Overload-Principle of progression- Principle of initial values -Principle of individual variability-Principle of diminishing returns-Principle of reversibility- Basic Elements of the Exercise Prescription: Mode-Intensity-Duration-Progression ofExercise.

UNIT – V

Definition of Terms cardiorespiratory fitness or Maximum oxygen uptake (VO_2max): General Guidelines for Exercise Testing-General Procedures for Cardiorespiratory Fitness Testing- Maximal Exercise Test Protocols-Treadmill Maximal Exercise Tests-Graded Exercise protocol - Balke Treadmill Protocol-Bruce Treadmill Protocol.

COURSE OUTCOMES:

1. Describe and discuss the relationship between physical activity and health across the lifespan.
2. Conduct health related fitness assessment for the cardio respiratory endurance, muscular strength, endure, flexibility and body composition

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3	3	3	3	3	3
2	3	3	3	3	3	3

MUSCLE AND EXERCISE METABOLISM

UNIT – I

Define metabolism – Energy for muscular contraction –Aerobic metabolism – Anaerobic metabolism – Fat oxidation –

UNIT - II

Fuel stores in skeletal muscle – Regulator of energy metabolism – Intracellular factors – Hormones – Insulin –Glucagon – Catecholamines – Growth hormones and cortisol

UNIT - III

Metabolic response to exercise – Cause of fatigue in High – Intensity exercise – prolonged exercise – Metabolic adaptation to exercise training

UNIT - IV

Metabolic calculation – Expressions of energy expenditure – Relative oxygen consumption – Metabolic equivaents (METs) – Calories – Fat stores – Net versus gross Vo2

UNIT - V

Metaboloic formulae - Walking and running formulae – Leg and arm ergometry formulae

COURSE OUTCOMES:

1. Students will be able to know the importance of muscle glycogen and blood glucose for increased ATP production within contracting skeletal muscle during Exercise.

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3					
2	3					

SUPPLEMENTS AND ERGOGENIC AIDS FOR PERFORMANCE ENHANCEMENT

Unit: 1

Introduction to Ergogenic aids - History and development of Ergogenic aids - types of Ergogenic aids - Anabolic Steroids - Amphetamines -Beta-2-Agonists– health risk of steroid abuse - Effects of Anabolic Steroids abuse.

Unit: II

WADA - IOC - Doping agency - Doping in sports - Blood Doping in sport – effects of blood doping - Erythropoietin – effects of exogenous administration of erythropoietin- Banned supplements in sports: Androstenedione - Dehydroepiandrosterone (DHEA) - 19-nonandrostenedione and 19- norandrostenediol -Ephedrine.

Unit: III

Diuretics - Target organ for Diuretic Action - Narcotic Analgesics & Athletic performance - mechanism of Action - Non-steroidal Anti - inflammatory Drugs & Corticosteroids, Narcoleptics: Beta – Adrenergic Antagonists.

Unit: IV

Research and scientific evidence approved supplements: Supplements - Liquid meal supplements - Sports gels - Sports bars - Creatine - Creatine as Supplement - Mechanisms of Creatine action - Creatine and safety - Glycerol - Iron Supplement- BCAA Supplement.

Unit: V

Supplements under consideration: Glutamine - Ribose - Colostrum - Beta-Hydroxy Beta Methyl butyrate (HMB) - Carnitine - Carnitine in the body - Coenzyme Q10 - Ginseng – Pyruvate - Vitamin Supplement.

COURSE OUTCOMES:

1. To apply the knowledge and to describe the ill effects of ergogenic aids to athletics
2. To educate the athletics about the use of doping substances will harm the important system and further will decline the performance.

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3					
2	3					

NUTRITIONAL PLANNING FOR SPORTS AND EXERCISE

Unit I-

Meal Planning and Preparation: Principles of meal planning- Planning and preparation of nutritionally adequate diets for Adult man - Adult woman- Adolescent - School going child - Preschooler- Nutrition for Active Pregnant woman and Lactating woman- Special Nutritional Concerns: Vegetarian diets-The types of vegetarian:Flexitarian-Lacto-Ovo- Vegetarian-Lacto-Vegetarian-Ovo-Vegetarian-Vegan-Other Styles (Fruitarians)-Nutrition Challenges for Vegetarians.

Unit II-

Water Balance and imbalance: Euhydration, Hypohydration, and Hyperhydration-Thermoregulation-Hyponatremia-Dehydration- Rehydration- Fluid balance in sports and exercise, importance, symptoms and prevention of dehydration-Age-Related Fluid Needs - Sports Drink – Hypotonic, Isotonic and Hypertonic drink for hydration/ energy and recovery drink-Other Types of Drinks:Energy Drinks-Oral Rehydration Solutions (ORS)-Sports Waters-Vitamin Waters-Coconut Water-Alcohol-Tea, Coffee and Cola.

Unit III

Energy and Sports Performance: Dietary Carbohydrate and Sports Performance-Dietary Fat and Sports Performance-Dietary Protein and Sports Performance-Vitamins and Sports Performance-Minerals and Sports Performance-The Pre-competition Meal-Liquid Meals-Planning and preparation of Energy dense recipes- High fibre recipes- Low fat recipes- Low sodium recipes-Antioxidants, Exercise and free radicals, Role of antioxidants in preventing damage and recovery time.

Unit IV

Meal planning for regular training- Balanced diet of m calorific value for specific sport and exercising person-Diet before competition-during Competition-after Competition (Basketball and Netball, Cricket, Cycling, Football, Hockey, Rugby, Swimming, Marathon and Endurance Running, Sprints and Power Sports)

Unit V

Paralympic sports -Classification of disabilities-Physiology and metabolism-Physiological responses to exercise-Energy expenditure- Thermoregulation-Body composition-Bone density-Dietary issues for athletes with disabilities: Current dietary intakes-Fiber, timing of food intake and bowel control-Fluid intake-Body composition management- Nutritional supplements-Eating difficulties and behaviors observed in some athletes with disabilities.

COURSE OUTCOMES:

The students will be proficient in planning menus with macro and micronutrients for various sports.

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3					

EXERCISE ASSESSEMENT IN SPECIAL POPULATION

UNIT – I

Health screening – importance of pre- exercise evaluation – Medical history, personal history, family history, physical examination, past medical history – for children and elderly

UNIT - II

Exercise assessment in Children's – exercise testing considerations – Hemo dynamic and pulmonary characteristic of children response to exercise –equipment used in testing - exercise equipment -Cycle ergometer – treadmill – ECG recording equipment Comparison of treadmill versus cycle ergometer for pediatric exercise testing– exercise protocol- Indications and Contra indication for stress testing – relative risks for Stress testing – Lower risk and Higher risk.

UNIT - III

Exercise assessment in Elderly - clinical evaluation - practical considerations of Routine exercise testing- Exercise testing Consideration prognostic assessment with exercise testing – exercise protocol – Special consideration for older than 75 years.

UNIT - IV

Definition of Preeclampsia – Post patrum –Exercise and pregnancy Exercise testing – Exercise assessment in pregnancy –- Pre testing screening - PAR Med-X for Pregnancy- physical activity readiness examination – Patient information – Pre exercise testing checklist- general health status – Status of current pregnancy – activity habits during

pregnancy period – Contra indication to exercise to be recommended by the healthcare provider Medical and safety Concerns for mother and foetus Maximal exercise testing – fetal response to maximal exercise – submaximal exercise - Aerobic capacity testing, strength testing.

UNIT - V

Emergencies – information pertinent to the information report – emergency equipment and supplies for a health/ fitness facility.Sudden cardiac arrest – Automated External Defibrillators – Implantable Cardio inverter Defibrillators and Sudden cardiac Arrest. Other medical concerns – First aid kits – Blood borne pathogens – first aid kit for a fitness facility.

COURSE OUTCOMES:

1. Became a specialized personal trainer for special population such as pregnant women, children and the elderly.
2. Analyze and interpret data from an exercise test.

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3					3
2	3					3

SPORTS NUTRITION

Unit- I

Basic Nutrition- classification of carbohydrates- Proteins- Essential and Nonessential – Lipids- classification- Vitamins- classification- Minerals- classifications.

Unit- II

Sports Nutrition- Assessment of Nutritional status- carbohydrate diets for training- Muscles and Liver Glycogen- carbohydrate loading- Carbohydrate intake before, during and after exercise.

Unit- III

Protein requirement for training for Endurance, Strength- Protein essential for before, during after Exercise- Dehydration- strategies to delay fatigue.

Unit- IV

Nutritional need for Special population- Nutrition need for young and Ageing athletics- Athletics with diabetes- Glucose monitoring during exercise- Preventing and managing Hypoglycemia- Physical activity for people type with II diabetes.

Unit- V

Dietary guideline for eating right- Food Plate - Functional food pyramid- Planning Diets for aerobic and anaerobic sports- Planning for vegetarian athlete and vegan athlete, overweight and obesity, Hyper tension, Coronary Heart Disease and Lung disease.

COURSE OUTCOMES:

1. Provide individual advice and guidance in the area of sports nutrition.
2. Design and run a group consultation for athletes about sports nutrition.
3. Develop knowledge on sports nutrition.

course outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
1	3		3	3	3	3
2	3		3	3	3	3
3	3		3	3	3	3

MSBCT 101 FUNCTIONAL ANATOMY AND PHYSIOLOGY

Unit-I

Organization of human body Anatomy and physiology- different levels of anatomy and physiology-Structural and functional organization- six levels of organization- Characteristics of life-six characteristics-Organ systems of the body-Homeostasis: positive and negative feedback-Terminology; anatomical position, supine, prone, directional terminology – body parts and region- body planes. Body cavities-Serous membranes- Cells; structure of cell-Tissues; types of tissues; epithelial tissue, connective tissue, muscular tissue, nervous tissue-membranes.

Unit-II

Skeletal system; functions of skeletal system-cartilage-bone histology; bone matrix, bone cells, woven and lamellar bone, cancellous and compact bone- bone anatomy; bone shapes, structure of long, flat, short, irregular bones-bone development; intramembranous ossification, endochondral ossification- bone growth; growth in bone length and width, growth at articular cartilage, factors affecting bone growthbone remodelling- bone repair-effects of aging on skeletal system-skeletal system gross anatomy; axial skeleton; skull, hyoid bone, vertebral column and thoracic cage- appendiclular skeleton; pectoral girdle and upper limb, pelvic girdle and lower limb.

Unit-III

Articulations and movement Joints, classification of joints; fibrous joints and its types, cartilaginous joints and its types, synovial joints- structure, bursa and tendon and their functions, types of synovial joints- types of movements; gliding movements, angular movements, circular movements and special movements- structure of shoulder joint, elbow joint, hip joint, knee joint, and ankle joint and arches of the foot

Unit-IV

Muscular system (Histology and Physiology) Functions of muscular system, properties of muscle and types of muscle tissue- structure of skeletal muscle; connective tissue covering of the muscle, nerves and blood vessels, muscle fibers- physiology of skeletal muscle fibers, sliding filament theory, neuro muscular junction- types of muscle contractions- energy sources

of skeletal muscles; creatine phosphate, aerobic respiration, anaerobic respiration, oxygen deficit and recovery oxygen consumption- slow and fast twitch fibers; effects of exercise- effects aging on skeletal muscle Muscular System Gross Anatomy- origin, insertion, agonist, antagonist, synergist, prime mover and fixate- muscle shapes- muscles of head and neck, trunk muscles- muscles moving vertebral column, thoracic muscles, abdominal wall, pelvic floor and perineum-upper limb muscles; scapular movements, arm movements, forearm movements, wrist, hand and finger movements- lower limb muscles; thigh movements, leg movements, ankle, foot and toe movements.

Unit-V

Functional organization of nervous tissue Functions of nervous system- divisions of nervous system; CNS and PNS- cells of nervous system, neurons and types of neurons- organisation of nervous tissue- electric signals- spinal cord and spinal nerves- structure-reflexes- brain and cranial nerves-development of CNS- structure and functions of brain- integration of nervous system functions.

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1. Richard L. Drake et al. Gray's Anatomy for students (3rd Edition), Elsevier,2015.
2. Seeley Stephens Tate. Anatomy & Physiology (8th Edition), McGraw Hill, 2008.
3. Valerie C. Scanlon and Tina Sanders. Essentials of anatomy and physiology, F.A. Davis Company, 2015.
4. Francesca Gould. Anatomy, Physiology and Pathology (3rd edition), Nelson Thornes, 2012
5. Kathryn Lutgens et al. Kinesiology (Scientific Basis of Human Motion), Brown and Bench mark, 1992.
6. Donald C. Rizzo. Fundamentals of anatomy and physiology, Delmer, 2001.
7. Clare E. Milner. Functional anatomy for sports and exercise, Routledge, 2008.
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9. Robert. S. Behnke. Kinetic anatomy (3rd edition), Human Kinetics, 2006.
10. Christy Cael. Functional anatomy, Lippincott.2010.
11. Byas Deb Ghosh. Human anatomy for students (2nd edition), Jaypee Brother, 2013.

E- RESOURCE

www.alison.com

https://opentextbc.ca/anatomyandphysiologyteachmeanatomy.info

http://anatomyatlases.org/atlasofanatomy/plate01/01skullfront.shtml

http://www.innerbody.com/image/musfov.html

COURSE OUTCOMES:

Students are able to

CO 1 To make the students to learn the fundamental concepts and terminology of anatomy and physiology

CO 2 To equip the students to learn (emphasis on Musculo-skeletal system) system of the body

CO 3 To help them to understand the structure and the functions of the body

CO 4 To make them acquire a strong foundation in anatomy which will facilitate the study of biomechanics

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2	1	2		1		
2	3	2				1		
3	3	3				1		
4	3	3		1		1		

MSBCT 103 DYNAMICS OF MOTOR SKILL ACQUISITIONS

Unit I

Characteristics of a skilful performance - learned - Efficient - Goal directed - Technical model - Fluent -Aesthetically pleasing- Motor and perceptual skills- Classification of skills - Gross and fine- Open and closed - Discrete, serial and continuous- External and internally paced - Simple or complex - High and low organization- Definition and characteristics of abilities - characteristics: innate, underlying and enduring traits - gross motor and psychomotor abilities.

Unit II

Motor skill development - motor skills- fundamental motor skills- sports specific sills-Theories related to the learning of motor skills - Description of the stimulus-response (S/R) bond and application of related theories - Associationist theories: operant conditioning – shaping behaviour, the use of reinforcement, link to trial and error, linking of the S/R bond - Cognitive

theory: work of the Gestaltists – wholeness and insight learning - Observational learning: the work of Bandura – the four elements (attention, retention, motor reproduction, motivation).

Unit III

Reinforcement : Definition and examples of positive reinforcement, negative reinforcement and punishment, as methods of strengthening or weakening the S/R bond - Ways of strengthening the S/R bond through repetition, satisfaction/annoyance, and through physical and mental preparedness- Theories related to motor and executive programmes - Definition as a generalised series of movements: creation of programmes in the long term memory; awareness of the major programmes/sub-routines of a range of motor skills - Open loop control: retrieval of programmes by making one decision, used in quick movements where there is no time for feedback, with examples - Closed loop control: detection and correction of movements during the performance through the use of feedback, with examples - Schema theory: a way of modifying the motor

programme by the use of schema or rules of information- Schmidt's sources of information as recall and recognition schema -Four rules of schema (knowledge of initial conditions, knowledge of response specifications, sensory consequences, movement outcomes) - Examples of the application of the schema theory in teaching and coaching.

Unit IV

Theory of information processing in the performance of motor skills Basic models of information processing: display, sensory information, sense organs, perception, decision making, effector mechanism response and feedback- Memory: basic model of the memory process: selective attention, short term sensory store, short term memory, long term memory - Reaction time : definitions of reaction time, movement time and response time - importance of a short reaction time -factors affecting reaction time, including psychological refractory period, in a range of sporting activities - Feedback - importance and functions of feedback - types of feedback to include: intrinsic and extrinsic, terminal and concurrent, positive and negative, knowledge of performance, knowledge of results- use of practical examples to show how feedback can be used effectively to improve performance.

Unit V

Phases of learning movement skills - Cognitive, associative, autonomous phases of learning - characteristics of each phase and their practical implications- Transfer of learning - definition

of transfer of learning – types – Positive transfer – Negative transfer – Proactive and retroactive – Bilateral transfer- Motivation - definition of motivation - extrinsic and intrinsic motivation - effect of extrinsic rewards on intrinsic motivation- Theories related to arousal levels - drive theory -inverted U theory - drive reduction theory

REFERENCE:

1. Honeybourne J. Acquiring Skill in Sport, Routledge, 2006.
2. McMorris T. Acquisition and Performance of Sports Skills, Wiley, 2004.
3. Magill R. Motor Learning, Concepts and Application, McGraw Hill, 2004.
4. Sharp B. Acquiring Skill in Sport, Sports Dynamics, 1992.
5. Williams H and Hodges N. Skill Acquisition in Sport, Routledge, 2004.
6. Paul E. Robinson. Foundations of Scientific Coaching. Routledge. 2010.
7. Don Gordon. Coaching Science. Learning Matters. 2009.

COURSE OUTCOMES:

Students are able to

CO 1 To equip the students to understand the basic of skills acquisitions of sports performance

CO 2 To make them understand the basic of skills and selected sports movement pattern

CO 3 To enable them to understand the link between motor skills, ability, learning and performance

CO 4 To familiarize the students with various theories improving and affecting the sports skills performance

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	3	1	1		1	1	
2	3	3	1			1	1	
3	3	2	1			1	1	
4	3	2		1		1	1	

MSBCT 202 BIOMECHANICAL INSTRUMENTATION AND MESUREMENT

Unit-I

Spots and exercise biomechanist- role and functions- research, scientific support services, education, consultancy- Analysis services; qualitative analysis, quantitative analysis- Procedures; ethics, pre analysis preparation, detailed reporting.

Unit-II

Motion analysis using video- equipment considerations- video cameras, picture quality, frame rate, shutter speed, manual iris and low light sensitivity, gen lock capability, recording medium, recording and storage device, specification of computer, capture software, video playback system, coordinate digitiser- data collection procedures- two dimensional and three dimensional video recording- reporting a video motion analysis study.

Unit-III

Motion analysis using online systems - Equipment considerations- data collection procedures- processing, analysing and presenting motion analysis data- reporting a motion analysis study. Force and pressure measurement - Force platform- construction and operation- technical specification- calibration- applications- Pressure distribution measurements- reporting a force or pressure analysis study.

Unit-V

Surface electromyography- equipment considerations- data collection procedures; electrode configuration, location and orientation, skin preparation, cross talk- sampling- processing, analysing and presenting EMG- reporting an EMG study.

Unit-V

Isokinetic Dynamometry-Applications of isokinetic dynamometry- mechanical basis of isokinetic dynamometry measurements- isokinetic equipment considerations- isokinetic experimental and data collection procedures- processing, analysing and presenting isokinetic data- reporting an isokinetic study.

REFERENCE:

1. Paul Grimshaw et al. Sports & Exercise Biomechanics, Taylor & Francis Group, 2007.
2. Susan J. Hall. Basic Biomechanics, McGraw Hill Education, 2004.
3. Peter McGinnis. Biomechanics of Sport and Exercise, Human Kinetics, 2005.
4. Kathryn Lutgens et al. Kinesiology (Scientific Basis of Human Motion), Brown and Bench mark, 1992.
5. Roger Bartlett. Introduction to Sports Biomechanics Analyzing Human Movement Patterns, Routledge, 2007.
6. Knudson, Duane V. Fundamentals of biomechanics, Springer, 2007.
7. Vladimir, Medved. Measurement of human locomotion, CRC Press, 2001
8. John Mc Lester, & Peter St. Pierre, Applied biomechanics, Thompson, 2008.
9. Carl J. Payton & Roger M. Bartlett, Biomechanical evaluation of movement in sports and exercise, Routledge, 2008.
10. Roger Bartlett. Introduction to Sports Biomechanics, Spon Press, 1997

COURSE OUTCOMES:

Students are able to

CO 1 To familiarize the students with basic electronic devices

CO 2 To introduce the students the basic properties of high speed cameras and calibrations

CO 3 To enhance their ability to asses and analyse human locomotion

CO 4 To provide students with a strong mechanical foundation to acquire the professional competence, knowledge and skills

CO 5 To study electromyography and force platform used for kinetic quantity measurement

CO 6 To provide knowledge about advanced equipment and their significant practical applications in biomechanics

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	1	1	3			2	1	2
2	1	1	3			2	1	2
3	1	1	3			2	1	3
4	1	1	3			2	1	3
5	1	1	3			2	1	3
6	1	1	3			2	1	3

MSBCT 203 PALPATION TECHNIQUE AND KINANTHROPOMETRY

Unit-I

Palpation technique- need and importance, palpation of bones, bony edges and prominence, muscle bellies, tendons, and ligaments. Palpation of shoulder complex, elbow complex, and hand. Palpation of hip and groin, knee joint, foot, spine and pelvis.

Unit-II

Anthropometry – history, need, scope and importance- preliminary considerations- subject-data collection- anthropometry equipment. Anthropometry profile- human body composition-densiometry; under water weighing, dual energy X ray absorptiometry, skin fold method, bioelectrical impedance. Anthropometric model - adipose tissue, muscle, bone.

Unit-III

Anthropometric land marks – definitions, vertex-supra sternale, epigastrale, thelion, acromiale, radiale, stlion, dactylion, iliocristale, iliospinale, trochanterion, tibial mediale and laterale. Heath carter somatotype method - anthropometric and photoscopic somatotype methods-endomorphymesomorphy- ectomorphy-Anthropometric landmarks- reference land marks-marked land marks- basic measurements. Skinfold measurement – locations of skinfold sites - cheek-chin-pectoral, axilla, abdomen iliac crest, supraspinale, subscapular, triceps, biceps, patella-mid thigh, proximal calf, medial calf. Waist hip ratio- body mass index- fat free index.

Unit-IV

Anthropometric measurement – length and breadth measurement – technique and procedures- Length - Acromiale-Radiale length (arm), Radiale-Stylion length (forearm), Mid-stylion-Dactylion length (hand), Iliospinale Height (obtained height plus box height), Trochanterion Height (obtained height plus box height), Trochanterion-Tibiale Laterale length (thigh), Tibiale Laterale Height (leg), Tibiale Mediale-Sphyrion Tibiale (tibia length), Foot length. Breadths - Biacromial breadth, Biiliocristal breadth, Transverse Chest breadth, Anterior-Posterior Chest Depth, Biepicondylar Humerus breadth, Wrist breadth, Hand breadth, Biepicondylar Femur breadth, Ankle breadth, and Foot breadth.

Unit-V

Anthropometric measurement - Girth- Head Girth, Neck Girth, Arm Girth (relaxed), Arm Girth (flexed and tensed), Forearm Girth, Wrist Girth, Chest Girth, Waist Girth, Omphalion Girth (abdominal), Gluteal Girth (hip), Thigh Girth (upper), Mid-Thigh Girth, Calf Girth, and Ankle Girth. Heath carter somato typing, testing and classification procedure - report generation technique.

REFERENCE:

1. Bernhard Reichert. (2015). Palpation technique (2nd Edition), Thieme Publishers, Delhi.
2. Roger Eston, Kinanthropometry and Exercise Physiology Laboratory Manual: Tests, Procedures and Data: Volume One: Anthropometry (Volume 1) 3rd Edition.
3. ISAK Kinanthropometry manual
Web link: https://www.isak.global/WhatIsIsak/#GoToKina

COURSE OUTCOMES:

Students are able to

CO 1 To learn the palpation technique of bones, bony landmarks, skeletal muscles and tendons of human body

CO 2 To understand the concepts of human body measurement

CO 3 To identify the bony landmarks of human body

CO 4 To acquire the technique of measuring human body segments length, girth, and breadth

CO 5 To learn the technique of measuring percent body fat using skin fold measurement

CO 6 To assess and categorize the human body into endomorph, mesomorph and ectomorph

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2	2			1	1	
2	3	2	2			1	1	
3	3	2	2			1	1	
4	3	3	2			1	1	
5	3	3	2			1	1	
6	3	1	2			1	1	

MSBDSE 402 MODELLINIG AND SIMULATION

Unit-I

Introduction to Simulation: Simulation, Advantages, Disadvantages, Areas of application, System environment, components of a system, Model of a system, types of models, steps in a simulation study. Simulation Examples: Simulation of Queuing systems, Simulation of Inventory System, Other simulation examples.

Unit – II

General Principles: Concepts in discrete - event simulation, event scheduling/ Time advance algorithm, simulation using event scheduling. Random Numbers: Properties, Generations methods, Tests for Random number- Frequency test, Runs test, Autocorrelation test.

Unit-III

Random Variate Generation: Inverse Transform Technique- Exponential, Uniform, Weibull, Triangular distributions, Direct transformation for Normal and log normal Distributions, convolution methods- Erlang distribution, Acceptance Rejection Technique Optimisation Via Simulation: Meaning, difficulty, Robust Heuristics, Random Search.

Unit – IV

Input Modelling: Data collection, Identification and distribution with data, parameter estimation, Goodness of fit tests, Selection of input models without data, Multivariate and time series analysis. Verification and Validation of Model – Model Building, Verification, Calibration and Validation of Models.

Unit-V

Output Analysis – Types of Simulations with Respect to Output Analysis, Stochastic Nature of output data, Measures of Performance and their estimation, Output analysis of terminating simulation, Output analysis of steady state simulations. Simulation Softwares: Selection of Simulation Software, Simulation packages, Trend in Simulation Software

REFERENCE:

1. Jerry Banks, John S Carson, II, Berry L Nelson, David M Nicol, Discrete Event system Simulation, Pearson Education, Asia, 4th Edition, 2007, ISBN: 81-203-2832-9. 2. Geoffrey Gordon, System Simulation, Prentice Hall publication, 2nd Edition, 1978, ISBN: 81-203-0140-4.

3. Averill M Law, W David Kelton, Simulation Modelling & Analysis, McGraw Hill International Editions-Industrial Engineering series,4th Edition, ISBN: 0-07-100803-9.

4. Narsingh Deo, Systems Simulation with Digital Computer, PHI Publication (EEE), 3rd Edition, 2004, ISBN : 0-87692-028-8.

COURSE OUTCOMES:

Students are able to

CO 1 To introduce basic concepts of the simulation and modeling

CO 2 To equip the students to develop basic simulation and modelling skills

CO 3 To understand the various types of simulation, techniques and methods

CO 4 To familiarise the students with simulation modelling techniques in 3D motion analysis

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	2		3	1		1	3	
2	2	3	2		2			3
3	2		3	1		1	2	1
4	2		1					

MSBCT 403 SPORTS PERFORMANCE ANALYSIS

Unit-I

Sports Performance analysis – meaning, need and importance of sports performance analysis, careers opportunities in sports performance analysis – purpose of sports performance analysis – match analysis, work rate analysis. Sports performance analysis methods and procedures

Unit-II

Notational Analysis - Sport-specific notational systems; computerised notational analysis; notation in individual sports; notation in team sports; augmented feedback through video-based technologies; modelling of competitive sport; analysis of structures of sports informing performance indicators; flowcharts and presentation models of sports performance; reliability and validity of notational data; data processing; probability analysis; literature searching; critical evaluation of literature.

Unit-III

Analysis of Sports Technique - Observation of movement; systematic models of qualitative technique analysis; deterministic models of technique analysis; principles of movement (position, orientation, velocity, acceleration, force production); quantitative analysis of performance; accepted 2D filming protocols; comparison to model proformas; assessment of reliability; justification of methods.

Unit-IV

Athlete monitoring and analysis - Time-motion analysis in sport; analysis of athlete tracking systems; GPS and accelerometer analysis of training and competition; monitoring and analysis of sport-specific physical and psychological variables; physiological monitoring; external sources of data relating to sports performance; wind gauge, photo finish, hawk eye technology, goal line technology, hot spot, reliability of data and sources.

Unit-V

Softwares in sports performance analysis – Dartfish, Sports code, Quintic, Kinovea, and Longomatch. Technical requirements, installation procedure, tools, features and report generation.

Reference:

1. Hughes M. and Franks, I. Essentials of performance analysis in sport. Routledge. 2015..

2. McGarry, T., O'Donoghue, P. and Sampio J. Handbook of sports performance analysis. Routledge. 2013.

3. Peter & Lucy. Data analysis in sports. Routledge. 2015.

COURSE OUTCOMES:

Students are able to

CO 1 To make the students to learn the fundamental and advance strategies of performance analysis

CO 2 To enable the students to acquire the video capturing technique

CO 3 To make the students to learn and acquire the skills of using sports performance analysis software

CO 4 To enable the students to acquire the skills of sports performance analysis

CO 5 To enable the students to diagnose the strength and weakness of a player / team

CO 6 To create a platform for the students to choose sports perform analysis as a career

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2	3	1	1		1	2
2	3	2	3	1	1		1	2
3	3	2	3	1	1		1	2
4	3	2	3	1	1		1	1
5	3	2	3	1	1		1	2
6	3	2	3	1	1		1	3

MSBDSE 102 Foundations of Fitness and Exercise Prescription

UNIT-I

Fitness – health related fitness, skill related fitness-components of health related fitness - components skill related fitness – Pre activity screening- guidelines, questionnaire, Risk stratification – measurement of resting and exercise blood pressure and heart rate –Body composition – BMI, WHR, Skin fold, Bioelectrical impedance, Hydrostatic weighing.

Unit-II

Muscular fitness- muscular strength– hand grip strength test, 1 RM test, Isokinetic test – Muscular endurance – curl up, push up – Flexibility – sit and reach test. Cardio respiratory fitness Maximal test - Beep test - Maximal Oxygen Consumption Test (VO2max) - Walking / Running Tests - Balke 15 minute test - Cooper 12 minute test - Sub maximal tests-Cycle Test-Astrand Rhyming Bicycle Ergometer Test - Step test - Harvard Step Test - Queens College Step Test - YMCA 3 Minute Step Test - Harvard step test - AAHPERD Health related physical fitness test.

Unit-III

Skill related fitness test – speed – 50m test – Reaction time – Ruler drop test - Tests of Agility-Illinois Agility Run-Shuttle Run test (25 yards) - Zig Zag Test - T Test - Hexagon test-Tests of balance - Stork Stand Test - Balance Beam Test – Modified Bass Test of Dynamic Balance-Power - Margaria Kalamen Anaerobic Power Test. Test, Measurement and Evaluation - Criteria for selection of a standard test – Validity- Reliability - Objectivity – Norms.

UNIT-IV

Warm up – Cool down - Principles of training - FITT principle - Cardio respiratory exercise prescription – Heart Rate Reserve method (HRR), Maximum Heart Rate method, RPE scale – Training methods – Slow continuous method, Fast continuous method, Interval training, High Intensity Interval training, Fartlek training, Functional training.

Unit-V

Resistance training – types of resistance training, Muscular strength, muscular power, muscular endurance, and muscle hyper trophy – Frequency – repetitions- set – recovery – exercise to strengthen major muscles of the body. Flexibility – types of flexibility–active, passive, static, dynamic, ballistic – PNF - Stretching exercise for major muscles of the body.

REFERENCE:

1. ACSM's Health/Fitness Facility Standards and Guidelines, New York: Human, Kinetics, 1992.

2. ACSM's Health related Physical Fitness Assessment manual, Lippin Cott, 2008.

3. Michael Boyle. Functional Training for Sports. Human Kinetics, 2004.

4. Clake, H. Harrison. Application of Measurement to Health and Physical Education, New Jersey: Prentice Hall Inc. 1976.

5. Jensen, Clayne, R & Cyntha C. Hirst. Measurement in Physical Education and Athletics, MacMillan Publishing co., Inc New York, 1982

6. Juan Carlos. Functional Training. Human Kinetics. 2016

7. Arnold G. Nelson & Jouko Kokkonen, Stretching anatomy. Human Kinetics. 2007. 8. Edmund O. Acevedo and Michael A. Starks. Exercise Testing and Prescription lab Manual, USA: Human Kinetics Publishers, 2003.

9. Claudio Gil Soares de Araujo. Flexi test, USA: Human Kinetics Publishers, 2004. 10. Thomas and Roger. Essentials of strength training and conditioning, 3rd edition, Human Kinetics, 2008.

11. Vern Gambatta. Athletic Development. Human Kinetics, 2007.

12. Ryan George. Free weight training anatomy. Ulysses Press. 2016.

COURSE OUTCOMES: Students are able to

CO 1 To make the students understand the concepts of fitness

CO 2 To equip the students to learn the tests to measure each component of fitness

CO 3 To acquire the skills of pre exercise screening

CO 4 To learn the principles of training

CO 5 To equip the students to prescribe the exercise to the clients

CO 6 To understand the fitness norms and prepare fitness report of the clients

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	3	1	1		1		
2	3		1	1	1		1	2
3	3	3	1	1				

MSBDSE 301 SPORTS TECHNOLOGY

Unit-I

Sports Technology- meaning- definition- scope-need and importance of sports technologies – history of science and technology in sport-timeline of technology in sports-principle and purpose of instrumentation in sports-technological impact on sports- technologies enhancing sports: issues and controversies- equipment extending the body- disability and prosthetics; technology, policy and sport; inclusion/ exclusion.

Unit-II

Science of Sports Materials - adhesives- nano glue, nano modeling technology, nano turf-footwear 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 chronic film, high density modeling foam.

Unit-III

Surface of Playfields -modern surface for playfields, construction and installation of sports surfaces, types of materials: synthetic, wood, polyurethane. Artificial turf, modern technology in construction of indoor and outdoor facilities – use of computers and software's in match analysis and coaching.Sports Design: The body and new structures of sport, cyborg of sport. Enhancing the future of sports performance- sports design and innovation strategies, sports technologies and human factors,sportsinjuires and preventions strategies.

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: Running, throwing and jumping events – protective equipments: types, materials and advantages sports equipment with nano technology, advantages. Sports and fitness Wearable Equipment - Goniometer/ Torsiometer- Dynamometer- pinchmeter- Accelerometer- Myometer- Gyroscope- Heart rate monitor- GPS tracker- EMG sensor - Moov Motion Tracker- Magnetometer.

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: methods of erecting flood light and measuring luminous- video coverage: types, size, capacity, place and position of camera in live coverage of sporting events- use of computer and software in match analysis and coaching- key performance indicators used to assess tactical and technical performance, collected data related to key performance indicators using notational analysis, create performance profiles and communicate data effectively through verbal and visual means.

Reference:

1. Dr. Hoshiyar Singh, Sports Technology, KSK Publishers, 2017.
2. Franz Konstanstin Fuss, AleksanderSubis, martin Strangewood, Rabindra Mehta, Routlede Handbook of Sports Technology and Engineering, Routledge, 2013.
3. Peter culley, John Pascoe, Sports Facilities and Technologies, Routledge, 2009.
4. Sharon Dixon,The Science of Engineering of Sports Surface: Routledge Research in Sports Technology and Engineering, Routledge, 2015.
5. Hambers R, Gabbett TJ, Cole MH, Beard A. The Use of Wearable Microsensors to Quantify SportSpecific Movements – A Systematic Review. Sports Med, 2015.
6. Wundersitz DW, Josman C, Gupta R, Netto KJ, Gastin PB, Robertson S. Classification of team sport activities using a single wearable tracking device. J Biomech, 2015.
7. T. Madalinski, Sport, Technology and the Body: The Nature of Performance New York: routledge,2009.

8. Steven George Hayes, PraburajVenkatraman, Materailas and Technology for Sportswear and Performance apparel, CRC press: Taylor & Francis,2016.

9. Roberts P. suhumaker, osma K solieman, hsinchunchen, Sports Data Mining, springer,2010.

COURSE OUTCOMES: Students are able to

CO 1 To enable students to learn the fundamental of sports technology

CO 2 To equip the students to learn the technology used in sports

CO 3 To understand the different types of playfield surfaces, sports equipment's and its advantages

CO 4 To familiarise the students with the latest technology involved in sports and games

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2	3			1		
2	3	2		1	1		2	2
3	3	2	3			1		3
4	3	2					3	

MSBDSE 201 EXERCISE AND SPORTS PHYSIOLOGY

Unit I

Exercise physiology- definition, need and importance. Energy, work and power - Forms of energy- chemical, kinetic and potential- ATP - role, breakdown, re-synthesis of ATP- The principle of coupled reactions; exothermic and endothermic reactions- ATP resynthesis: three energy systems – ATP/PC (alactic) – The lactic acid system – The aerobic system - Detail required to include the type of reaction (aerobic or anaerobic), the chemical or food fuel used, the specific site of the reaction, the controlling enzyme, energy yield, specific stages within a system, and the by-products produced

Unit II

Energy continuum The type of exercise (duration and intensity) – the onset of blood lactate accumulation/OBLA) -The effect of the level of fitness, availability of oxygen and food fuels,

and enzyme control on the energy system used - The recovery process: returning the body to its pre-exercise state - The oxygen debt / excess post exercise oxygen consumption (EPOC) - The alactacid and lactacid debt components, including the processes that occur and the duration of each component Replenishment of myoglobin stores and fuel stores, and the removal of carbon dioxide - implications of recovery process to be considered when planning training sessions, for example training intensities, work/relief ratios.

Unit III

Principles of training: Specificity, progression, overloads (FIT), reversibility, moderation, and variance - The physiological implications of a warm up and cool down (for example, reduce the delayed onset of muscular soreness – DOMS) - periodisation of training to include the macro, meso and micro cycle- Awareness of the implications of the principles when applied to the candidate's own training.

Unit IV

Components of fitness (a) Aerobic capacity - Definition – factors affecting- training, age and sex - Methods of evaluating aerobic capacity (for example, multi-stage fitness test, PWC170 test) - Assessment of the candidate's own VO2 max., matching their result against the aerobic demand of their chosen activity -Types of training- continuous running, repetition running, fartlek and interval training - - Energy system and food/chemical fuels used during aerobic work - Physiological adaptations after aerobic training- Strength - Definition- types of strength – Strength endurance – maximum strength – Explosive/elastic strength – Static and dynamic strength -Factors affecting strength-, Types of training used to develop strength -The repetition, sets and resistance guidelines used to improve each type of strength - Use of multi-gym, weights, plyometrics and circuit/interval training (work intensity, work duration, relief interval, number of work/relief intervals)- Energy system and food/chemical fuels - physiological adaptations after training, including neural and physiological changes to skeletal muscle- physiological adaptation to flexibility , Body composition, Balance, co ordination, Reaction time and speed training.

Unit V

Erogenic aids - An awareness of current methods of performance enhancement - The effects of each aid - Which athletes would benefit from each aid - Nutritional aids: – Carbohydrate loading – Pre/post competition meals – Food/fluid intake during exercise : Use of creatine

supplements Blood doping and recombinant erythropoietin (Rh EPO) -Effects of caffeine - Effects of alcohol - Anabolic steroids (e.g. Nandralone)- Human growth hormone (HGH)

REFERENCE:

1. Clegg C, Exercise Physiology and Functional Anatomy, Feltham Press, 1995.

2. McArdle W et al. Essentials of Exercise Physiology, Lippincott Williams and Wilkins, 2005.

3. Wilmore J and Costill D, Physiology of Sport and Exercise, Human Kinetics, 2004. 4. John Porcarie et al. Exercise Physiology. F.A. Davis company, 2015.

5. K. Birch, D. MacLaren. & K. George. Sports & Exercise Physiology. 2005

COURSE OUTCOMES: Students are able to

CO 1 To understand basic sports physiology and the physiological factors affecting health, fitness and performance

CO 2 To familiarise with knowledge of health and skill related components of physical fitness

CO 3 To explore how the body adapts sports & exercise activities.

CO 4 T o identify exercise needs of a person/team and design appropriate exercise interventions

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	3	1	1		1		
2	3		1	1	1		1	2
3	3	3	1	1				
4	3	3	2	1		2	2	2

MSBDSE 202 PSYCHOLOGY OF SPORTS PERFORMANCE

Unit I

Individual aspects of sport performance: Personality - definition- theories of personality- trait perspective - extroversion/introversion, neuroticism/ stability, Type A/Type B: Social learning perspectives – interactionist approaches- Justification of the limitations of personality profiling in sport – Attitudes - meaning- The nature of attitudes,- inconsistencies and prejudice in sporting situations -components of attitudes cognitive, affective, behavioural-changing attitudes from negative to positive, including knowledge of: Cognitive dissonance – Persuasive communication. Motivation - Definition- Atkinson and McClelland's theory of achievement motivation (the need to achieve and the need to avoid failure)- Awareness of sport-specific achievement motivation (i.e. competitiveness).

Unit II

Group dynamics of sport performance - Groups and teams - Definition of a group/team- Knowledge of Steiner's model of group performance- Awareness of problems associated with productivity of a group/team, including: – Motivational factors (social loafing) – Co – ordination/co – operation factors (Ringlemann effect)- Knowledge of factors affecting the formation and development of a cohesive group/team. Leadership - meaning- importance leadership- Characteristics of leaders, including: – Autocratic/task-oriented – Democratic/social oriented – Laissez-faire - Emergent and prescribed leaders .Theories of leadership, including: – Trait theories – Social learning theories – interactionist theories - Fiedler's contingency model - Chelladurai's multi-dimensional model of leadership.

Unit III

Mental preparation for sport performance - Commitment - Goal settings -understand the importance and relevance to sport - Factors affecting the setting of goals. Self-confidence - Sports confidence - The concepts of trait sports confidence, competitiveness orientation, state sports confidence - Self-efficacy – Performance accomplishments – Vicarious experiences – Verbal persuasion – Emotional arousal. Concentration- attentional control - cue utilisation - attentional styles. Emotional control - Definition of activation and arousal - Awareness of their relationship to personality, ability level, and complexity of the task - Peak flow experience and the zone of optimum functioning theory - Definition of anxiety- The nature and influences of anxiety, including: The trait/state distinction Multi-dimensional theory (cognitive anxiety and

somatic anxiety)- Sports competition anxiety. Anxiety management to improve performance– Cognitive techniques (mental rehearsal/imagery, positive self talk, thought stopping, rational/ positive thinking) – Somatic techniques (progressive muscular relaxation, biofeedback relaxation)

Unit IV

Competition effects on sport performance - Social facilitation and audience effects - Knowledge of the positive (facilitation) and negative (inhibition) effects of others (including an audience and co-actors) on performance -Awareness of the links with levels of arousal, and the heightening of the dominant response (Zagonc) - The causes and effects of evaluation apprehension (Cottrell) - Awareness of the distraction effect - Awareness of the Home field Advantage Phenomenon - The use of strategies to combat the effects of social inhibition, particularly the use of selective attention and mental rehearsal. Aggression -The difficulties associated with the definition of aggression as opposed to assertion -Definition of channeled aggression-Causes of aggressive behaviour - Theories of aggression (in sporting situations) including: – Instinct theories – Frustration-aggression hypothesis – Aggressive-cue hypothesis (Berkowitz) – Social learning theories- Methods of eliminating aggressive tendencies of performers.

Unit V

Consequences of sport performance - Attribution theory - Reasons for success and failure Weiner's model - The use of attributional retraining - Strategies for the promotion of mastery orientation and the avoidance of learned helplessness.

Reference:

1. Cox R. Sport Psychology: Concepts and Applications, McGraw Hill, 2000.
2. Gill D. Psychological Dynamics of Sport and Exercise (2nd edition), Human Kinetics, 2000.
3. Jarvis M. Sport Psychology: A student's handbook, Routledge, 2006.
4. Ellis Cashmore. Sports and Exercise Psychology. Routledge. 2008.

COURSE OUTCOMES: Students are able to

CO 1 To make the students familiarise with concept of psychology applied in sports performance

CO 2 To integrate personal relevance of the selected theories, techniques, and skills to one's own sport experiences

CO 3 To develop an understanding of how psychological factors influence performance in sport and physical activity settings

CO 4 To develop the ability to think critically about issues in sport and physical activity.

CO 5 To establish a solid foundation of knowledge regarding psychological theories and research in sports setting

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MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	2	1	3			1		
2	2	1	3				2	3
3	2	1	3			1		3
4		1	3				2	
5	2	1	3			1		

MSBDSE 401 HUMAN POSTURE AND CORRECTIVE EXERCISE

Unit-I

Posture – definition – static and dynamic posture – importance and benefits of good posture - causes of poor posture poor posture, compensatory posture. Vertebral alignment – development of postural curves - Standing posture – lateral view, anterior view, and posterior view. Sitting posture, good lying/sleeping posture. Postural synergies – fixed support synergies – ankle synergy, hip synergy, stepping synergy – change in support strategies – head stabilizing strategies.

–II

Analysis of Standing Posture – Plumb line - Sagittal plane alignment and analysis - Deviations from Optimal Alignment in the Sagittal plane - Claw toes, Hammer toes, Flexed knee posture, Hyper extended knee posture (Genu Recurvatum), Excessive anterior pelvic tilt, Lordosis and Kyphosis, Forward Head Posture - Frontal plane optimal alignment and analysis - Deviations from optimal alignment in the frontal plane - Pes Planus (Flat Foot), Pes Cavus, Genu valgum (knock knee), Genu varum (bowleg), Squinting or cross-eyed patella, Grasshopper-eyes patella, patella alta, Scoliosis.

Unit-III

Analysis of Sitting Postures - Muscle activity, Muscle activity in Sitting versus Standing postures, Interdiskal Pressures and Compressive Loads on the Spine, analysis of lying posture, Effects of Age, Pregnancy, Occupation, and Recreation on Posture – postural evaluation chart - Ergonomics & application in work environment.

Unit-IV

Muscle imbalance – functional evaluation of muscle imbalance - Muscle Analysis of Standing Posture - Posterior View – pelvic position – tilting and rotation, buttock region – Asymmetrical gluteal muscles, Hamstrings – Adductors - Triceps Surae - Shape of the Heel, Foot Posture, Spinal Extensors, Scapular Region, Line of Neck and Shoulder - Anterior View - Pelvic Tilt,

Abdominal Wall, Anterior Thigh Muscles, Arm Position, Pectoral Muscles, Deltoids, Sternocleidomastoid and Scalenes, Facial and Head Alignment - Lateral View - Head Position.

Unit-V

Corrective exercise - evaluation of shoulder - alignment analysis, movement analysis, muscle length, muscle strength, corrective exercise for the shoulder – The trunk and spine- evaluation, movement analysis, muscle length, muscle strength, corrective exercise for the trunk and spine – The pelvis, hip and knee- evaluation, movement analysis, muscle length, muscle strength, corrective exercise for the pelvis, hip and knee.

Reference:

1. Levangie PK, Norkin CC; Joint Structure & Function- A Comprehensive Analysis; Jaypee brothers, New Delhi; 2006.
2. Kapandji IA; The Physiology of Joints; Churchill Livingstone, Edinburgh; 1998.
3. Magee J D. orthopedic physical assessment. W.B. saunders ompany.
4. Grisaffi D. Posture and core conditioning Published by David Grisaffi and Personal Fitness Development in the United States of America.
5. Kendall, F. P., Mccreary, E. K., & Provance, P. G. (1993). Muscles Testing and Function (4th Ed). Baltimore: Williams &Wilkins.
6. Frank C C., Lardner assessment and treatment of muscle imbalance, human kinetics.
7. Kesh Patel, Corrective exercise: A practical approach, Rutledge, 2014.

COURSE OUTCOMES: Students are able to

CO 1 To learn the fundamental concepts of posture

CO 2 To understand the correct technique of static and dynamic posture

CO 3 To learn the abnormal postural deviations

CO 4 To learn and assess the posture and its deformities and produce a postural assessment report

CO 5 To indentify the abnormal postural deformities and suggestion of suitable corrective exercise

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2	1	2	3	1	2	
2	3		1	2	3		1	1
3	3	2		2	3	2		1
4	3		1	2	3		3	
5	3	2	3	2	3	1		

MSBDSE 402 MODELLINIG AND SIMULATION

Unit-I

Introduction to Simulation: Simulation, Advantages, Disadvantages, Areas of application, System environment, components of a system, Model of a system, types of models, steps in a simulation study. Simulation Examples: Simulation of Queuing systems, Simulation of Inventory System, Other simulation examples.

Unit – II

General Principles: Concepts in discrete - event simulation, event scheduling/ Time advance algorithm, simulation using event scheduling. Random Numbers: Properties, Generations methods, Tests for Random number- Frequency test, Runs test, Autocorrelation test.

Unit-III

Random Variate Generation: Inverse Transform Technique- Exponential, Uniform, Weibull, Triangular distributions, Direct transformation for Normal and log normal Distributions, convolution methods- Erlang distribution, Acceptance Rejection Technique Optimisation Via Simulation: Meaning, difficulty, Robust Heuristics, Random Search.

Unit – IV

Input Modelling: Data collection, Identification and distribution with data, parameter estimation, Goodness of fit tests, Selection of input models without data, Multivariate and time series analysis. Verification and Validation of Model – Model Building, Verification, Calibration and Validation of Models.

Unit-V

Output Analysis – Types of Simulations with Respect to Output Analysis, Stochastic Nature of output data, Measures of Performance and their estimation, Output analysis of terminating simulation, Output analysis of steady state simulations. Simulation Softwares: Selection of Simulation Software, Simulation packages, Trend in Simulation Software

REFERENCE:

1. Jerry Banks, John S Carson, II, Berry L Nelson, David M Nicol, Discrete Event system Simulation, Pearson Education, Asia, 4th Edition, 2007, ISBN: 81-203-2832-9. 2. Geoffrey Gordon, System Simulation, Prentice Hall publication, 2nd Edition, 1978, ISBN: 81-203-0140-4.

3. Averill M Law, W David Kelton, Simulation Modelling & Analysis, McGraw Hill International Editions-Industrial Engineering series,4th Edition, ISBN: 0-07-100803-9.

4. Narsingh Deo, Systems Simulation with Digital Computer, PHI Publication (EEE), 3rd Edition, 2004, ISBN : 0-87692-028-8.

COURSE OUTCOMES: Students are able to

CO 1	To introduce basic concepts of the simulation and modeling
CO 2	To equip the students to develop basic simulation and modelling skills
CO 3	To understand the various types of simulation, techniques and methods
CO 4	To familiarise the students with simulation modelling techniques in 3D motion analysis

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	2		3	1		1	3	
2	2	3	2		2			3
3	2		3	1		1	2	1
4	2		1					

MSBGE 201 SPORTS BIOMECHANICS

Unit – I

Sports Biomechanics – meaning, definition, need and importance biomechanics in yoga. Branches of biomechanics – statics, dynamics, kinematics and kinetics. Motion- types of motion, linear, angular and general motion. Planes and axis.

Unit-II

Kinematics - Linear and angular kinematics. Distance, displacement, speed, velocity and acceleration in linear and angular motion. Linear and angular momentum- Scalars and vectors. Principles of projectile motion. Impulse - Impulse momentum relationship.

Unit-III

Kinetics - Force – Inertia, internal force, external force, torque, gravitational force, centripetal force, centrifugal force, ground reaction force, friction, types of friction, pressure, characteristics of force. Lever – types of lever, centre of gravity, line of gravity, balance, stability and equilibrium, types of equilibrium, factors affecting equilibrium. Newton laws of motion. Work, power and energy, conservation of mechanical energy.

Unit-IV

Fluids - Motion in Water and Air – fluid-relative velocity- laminar flow and turbulent flow – buoyancy- Archimedes principles- flotation-drag- coefficient drag- form drag-wave drag- lift – coefficient lift-foil- Bernoulli principle- Magnus force-propulsive drag theory-propulsive lift theoryvortex generation- stroke technique.

Unit-V

Cartesian coordinate system, qualitative and quantitative analysis – biomechanical analysis of fundamental human movement- walking-running-jumping and throwing. Analysis of human posture and postural deformities. Sports performance analysis.

Reference:

1. Suasn J. Hall, Basic Biomechanics, McGrew Hill Education, 2004.
2. Joseph hamil et al. Biomechanical Basis Of Human Movement, Wolter Kluwer, 2015
3. Knujdson, Duane V. Fundamnetal of Biomechanics, Springer, 2007.
4. Peter McGinnis, Biomechniacs of Sports and Exercise, Human kinetics, 2005.

COURSE OUTCOMES:

Students are able to

CO 1 To equip the students to learn the basic of sports biomechanics

CO 2 To learn to apply the principle of physics in solving tasks associated with human locomotion

CO 3 To learn the internal and external forces of human movement

CO 4 To learn the principle of aerodynamics and hydrodynamics

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MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	2	2	1			1		3
2	2	2	1	1			2	
3	2	2	1		2	3		3
4	2	2	1				2	

MSBGE 101 KINESIOLOGY

Unit-I

Kinesiology: Meaning, history, scope and importance. Anatomical reference position- reference planes- reference axis- sagittal plane movement- frontal plane movement- transverse plane movement. Directional terms – joints movement terminology. Muscle – functions - structure- fiber architecture-structural classification of muscle- types of muscle fiber. Behavioural properties of muscle- types of contraction- role of muscles-uni joint- two joint and multi joint muscles. Factors affecting muscular force generation- force velocity relationship, length tension relationship, and short stretch cycle- electromechanical delay- - common muscle injuries. Bone: composition and structure of bone tissue - function- types of bone- axial and appendicular skeleton- Joints-classification of joints- articular cartilage- articular fibrocartilage- articular connective tissue- - common bone injuries.

Unit-II

Structure of shoulder joint and shoulder girdle- origin, insertion and action of shoulder joint muscles and shoulder girdle muscles- common injuries of shoulder joint and shoulder girdle- exercise programme to stretch and strengthen the shoulder joint muscles. Structure of elbow and wrist joint – origin, insertion and action of elbow and wrist joint muscles- common injuries of elbow and wrist joint- exercise programme to stretch and strengthen the elbow and wrist joint muscles. Structure of spinal column- origin, insertion and action of spinal column muscle- common injuries of spinal column- stretching and strengthening exercise programme to spinal column muscle.

Unit-III

Structure of pelvic girdle and hip joint- origin, insertion and action of pelvic girdle and hip joint- common injuries of hip joint- exercise programme to stretch and strengthen the pelvic girdle and hip joint muscles. Structure of knee and ankle joint- origin, insertion and action of knee and ankle joint muscles- common injuries of knee and ankle – exercise programme to stretch and strengthen the knee and ankle joint muscles.

Unit-IV

Gait - Meaning, phases of gait cycle- stance phase, swing phase. Temporal variables- stance time, single limb and double limb support time- swing time, stride and step time cadence, speed. Spatial variables stride length, step length, and width, degree of toe out. Abnormal gait: structural impairment- increased Q- angle. increased pronation and supination of the foot- Functional impairment- Parkinson’s gait, calcaneal gait, gluteus medius gait, gluteus maximus gait, antalgic gait, scissors gait, foot drop gait.

Unit-V

Posture - Definition – static and dynamic posture- poor posture and compensatory posture. Muscle analysis of standing posture- posterior view- pelvic position- tilting and rotation, buttock region-line of neck and shoulder- Anterior view- pelvic tilt, abdominal wall , facial and head alignment- Lateral view – head position. Analysis of standing posture- sagittal plane alignment and analysis-,lordosis and kyphosis. Frontal plane alignment analysis-pes planus,pes cavus, genu valgum, genu varum, scoliosis.

REFERENCE:

1. Levangie PK, Norkin CC; Joint Structure & Function- A Comprehensive Analysis; Jaypee brothers, New Delhi; 2006.

2. Kapandji IA; The Physiology of Joints; Churchill Livingstone, Edinburgh; 1998.

3. Magee J D. orthopedic physical assessment. W.B. saunders ompany.

4. Grisaffi D. Posture and core conditioning Published by David Grisaffi and Personal 5. Fitness Development in the United States of America.

6. Kendall, F. P., Mccreary, E. K., & Provance, P. G. (1993). Muscles Testing and 7. Function (4th Ed). Baltimore: Williams &Wilkins.

8. Frank C C., Lardner assessment and treatment of muscle imbalance, human kinetics.

COURSE OUTCOMES: Students are able to

CO 1	To equip the students with foundations of kinesiology
CO 2	To familiarize the students with muscle origin, insertion and action
CO 3	To equip the students on gait analysis.
CO 4	To enable the students to learn posture analysis

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	2	3	1	1		2	3	3
2		3	1		1		3	3
3	2	3	1	1		2	3	3
4	2	3	1				3	3

MSBAEC001 Communicative skills

Unit I

Listening: Barriers of Listening skill-Approaches to Listening –How to improve Listening exercises. Speaking: Paralanguage: Sounds, stress, intonation- Art of conversation – Presentation skills – Public speaking- Expressing Techniques.

Unit II

Reading: Kinds of Reading – Causes of reading difficulties – Reading strategies – exercises. Writing: Effective writing – Paragraph – Essay- Reports – Letters- Articles – Notices, Agenda & Minutes.

Unit III

Communication: Modes of Communication- Barriers – Interpersonal skills – Negotiation skills – Non- Verbal communication – Etiquettes

Unit IV

Group Dynamic skills: Group Discussion – Team building & Team work – Be a manager or leader – Decision making – creativity – Time & Stress management skills.

Unit V

Interview sills: Types of Interviews – Preparing for interview – Preparing a CV – Structuring the interview - Mock Interview - Quick Tips.

Reference:

1. Second Edition of "Communication Skills" Published by Carrier Skill Library.
2. Effective Communication Skills – A Book of MTD Training.
3. The Language Sound of Language by Michael Dobrovolsky and Francis katamba

COURSE OUTCOMES: Students are able to

CO 1 To develop communication skills by providing theoretical knowledge of the mechanism of effective communication

CO 2 To impart advanced training in standard pronunciation, word stress and intonation

CO 3 To train students in the correct use of English in a formal way

CO 4 To improve the learners' vocabulary by familiarizing them with the ways of word formation

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2	3			3	2	2
2	3	2	3			3	2	1
3	3	2	3			3	2	2
4	3	2	3			3	2	1

MSBCCA001 NSS/SWACHH BHARAT

1. NSS

A student has to enroll in NSS first year and serve in NSS for at the start of period of two years (120 hours each year) and production of regular certificate; he /she will be awarded two credits.

2. SWACHH BHARAT

A student has to serve for 15 days in village and produce a report signed by village administration officer to acquire the two credits.

COURSE OUTCOMES: Students are able to

CO 1	To make the student to learn the National social serve schemes and their importance in the society
CO 2	To make the students to understanding the importance of clean and green in the living environment

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	1	1				1	2	
2	1					2	1	

MSB SEC001 FUNDAMENTALS OF INFORMATION TECHNOLOGY

Unit I

Introduction to Computers - Computer – Meaning and definition – types of computer- Components of computer –Languages – LAN and WAN - Application software used in Sports Biomechanics and Kinesiology .Basic Computer Organization: input and output devices – Storage Devices – Software and Hardware.

Unit II

Storage Fundamentals - Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

Unit III

Software: Types of software - System Software: Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. Application software and types: Word Processing, Spread Sheets Presentation, Graphics, DBMS software.

Unit IV

Operating System & Data Communication - Functions, Measuring System Performance, Assemblers, Compilers and Interpreters. Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux. Communication Process, Data Transmission speed, Communication Types (modes), Data Transmission Medias, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking.

Unit V

E mail: meaning – need- opening email account, inbox and outbox, creati,ng and sending mails, replying and forwarding mail, attachment files- Skype- installation procedure- opening Skype account- video and audio conversation, voicemail, chat , group video call, send files, screen sharing, calls to mobile and landline. LinkedIn - opening LinkedIn account- profile, headlines, post & activity, jobs, chat, group conversation. Twitter - opening account- creating profile, tweet, Re tweet, follow and hash tag- E-learning - MOOC - coursera.

REFERENCE:

1. P.J.Barker, Walter Thombson. Basic computer studies, Oliver & Boyd, 1970.
2. Anita Goel. Computer fundamentals, Pearson education India, 2010.

COURSE OUTCOMES:

Students are able to

CO 1 To understand basic concepts and terminology of information technology

CO 2 To understanding of personal computers and their operations

CO 3 To acquired basic skills and be able to use the main personal computer applications

CO 4 To learn and explore latest information technology

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	3	2			1	2	1
2	3	3	2			1	2	1
3	3	3	2			1	2	1
4	3	3	2			1	2	1

MSBCCA002 MOOC

SYLLABUS

A student has to enroll any relevant MOOC course and submit the completion certificate to the department to acquire the two credits

COURSE OUTCOMES:

Students are able to

CO 1 To make the student to learn the multiskills related to curriculum from the web resources in international standard

CO 2 To make the students to understanding the importance of web learning and their importance

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	1	2	1		1	1	1
2	3	3	3		1	3	3	3

MSBAEC002 Personality Development

Unit I

Introduction to Personality Development - The concept personality- Dimensions of theories of Freud & Erickson- personality – significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success – What is failure - Causes of failure. SWOT analyses.

Unit-II

Attitude & Motivation - Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages –Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self-motivation- Factors leading to demotivation.

Unit-III

Self-Esteem - Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem – Low selfesteem - Symptoms - Personality having low self esteem - Positive and negative self-esteem. Interpersonal Relationships – Defining the difference between aggressive, submissive and assertive behaviours - Lateral thinking.

Unit -IV

Other Aspects of Personality Development - Body language - Problem-solving - Conflict and Stress Management - Decision-making skills -Leadership and qualities of a successful leader - Character-building -Team-work - Time management -Work ethics – Good manners and etiquette.

Unit-V

Employability Quotient - Resume building- The art of participating in Group Discussion – Acing the Personal (HR & Technical) Interview -Frequently Asked Questions - Psychometric Analysis - Mock Interview Sessions

REFERENCE:

1. Hurlock, E.B (2006). Personality Development, 28th Reprint. New Delhi: Tata McGraw Hill.

2. Stephen P. Robbins and Timothy A. Judge(2014), Organizational Behavior 16th Edition: Prentice Hall.

3. Andrews, Sudhir. How to Succeed at Interviews. 21st (rep.) New Delhi.Tata McGraw-Hill 1988.

4. Heller, Robert. Effective leadership. Essential Manager series. Dk Publishing, 2002 5. Hindle, Tim. Reducing Stress. Essential Manager series. Dk Publishing, 2003

6. Lucas, Stephen. Art of Public Speaking. New Delhi. Tata - Mc-Graw Hill. 2001

7. Mile, D.J Power of positive thinking. Delhi. Rohan Book Company, (2004).

8. Pravesh Kumar. All about Self- Motivation. New Delhi. Goodwill Publishing House. 2005.

9. Smith, B . Body Language. Delhi: Rohan Book Company. 2004

COURSE OUTCOMES:

Students are able to

CO 1 To develop the personality and life skills

CO 2 To help the students understand basic leadership qualities and personality traits

CO 3 To make students understand how setting goals in life is important

CO 4 To develop all-round personalities with a mature outlook to function effectively in different circumstances

CO 5 To become self-confident individuals by mastering inter-personal skills, team management skills, and leadership skills

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2	1			2	3	2
2	3	2	1			2	2	1
3	3	2	1			2		3
4	3	2	1			2		1

MSBCCA003 INTERNSHIP

INTERNSHIP

A student has to attend the internship programme for a period of two weeks in the summer vacation of first year. He/she will be visiting the established sports biomechanics laboratories to gain hands on experience and submit the internship report in the department at the start of third semester to acquire two credits.

COURSE OUTCOMES:

Students are able to

CO 1 To enable the students to learn the basic skills and techniques of sports and games

CO 2 To learn and apply the mechanical principle on the technique of sports skill

CO 3 To understand the technique of qualitative and quantitative analysis

CO 4 To equip the students to carryout 3D analysis on sports skills and generate a valid report

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2		1	2	3		
2		2	3				1	2
3	3			1	1	3	1	
4	3	3	2		2		1	1

MK16104A MATHEMATICS IN BIOMECHANICS

Unit-I

Algebra • Introduction and basic operation • Solving equations • Formulas and literal equations • Applied problems • Vector algebra basic operations

Unit-II

Matrix • Introduction and basic operations • Matrix multiplication • Algebraic properties of matrix operations • Invertible matrices • Special matrices; Triangular, Symmetric, Diagonal • Elementary matrices for matrices • System of equations an introduction • System of linear equations (Gaussian elimination) • System of linear equation (two and three variables) • Introduction to determinants • Eigenvalues and Eigen vectors • Diagnolisation of Matrices

Unit-III

Trigonometry • Introduction • Units of measurements of angle • Relation between the Length of an arc of a Circle and the Circular measure of its Central angle • General Angle (Conterminal Angle) • Angle in the Standard Position • Trigonometric Function • Trigonometric Function of any Angle • Fundamental Identities

• Signs and values of the Trigonometric function

Unit-IV

Calculus (Differentiation) • Functions of single variables • Concept of limit, continuity, and differentiability • Definition of derivative • Using the definition to compute derivatives • Techniques of differentiation • Derivatives of trigonometric function • Taylor's series • Functions of two variables, limit, continuity, partial derivatives • Concept of maxima and minima • Power series, Fourier series Calculus (Integration) • Fundamental and mean value – theorems of integral calculus • Evaluation of definite and improper integrals • Integration by parts • Integration by rational numbers • Substitution • Trigonometric substitution • The area problem and the definite integral

Unit-V

Ordinary differentials equations • First order equation (linear and non- linear) • Second order differential equations with variables coefficients • Variation of parameters methods • Higher order linear differential equations with constant coefficients Partial differential equations • Separations of variables • Laplace equation • Solution of one dimensional heat and wave equations

REFERENCE:

1. Peter H. Selby & Steve Slavin. Practical Algebra: A Self -Teaching Guide, 2nd Edition
2. Jiri Nedoma, Jiri Stehlík, Ivan Hlavacek, Josef Danek, TatjanaDostalova, Petra Preckova. Mathematical and Computational Methods in Biomechanics of Human Skeletal Systems: An Introduction, 2011.
3. Jiri Nedoma& Jiri Stehlik. Mathematical and Computational Methods and Algorithms in Biomechanics: Human Skeletal Systems, Wiley, 2011.
4. Marvin Bittinger. Basic College Mathematics, Global Edition, 12th Edition, Pearson, 2014.
5. Knudson Duane V. Fundamentals of biomechanics, Springer, 2007.

COURSE OUTCOMES:

Students are able to

CO 1 To enable the students to learn the basic mathematics related to biomechanics

CO 2 To make the students to apply mathematical concepts and principles to perform computations in biomechanics

CO 3 To enable the students to apply mathematics to solve problem related to biomechanics

CO 4 To equip the students to acquire a strong mathematic foundation which facilitate in learning MATLAB and simulation and modelling.

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	3	1			1	2	3
2	3	3	1			1	2	2
3	3	3	1			1	2	2

MK16203 MAT LAB

Unit-I

Quick start • Desktop basics • Matrices and arrays • Workspace variables • Character strings • Calling function • Plots and programming scripts

Unit-II

Language fundamentals • Matrices and magic squares • Expressions • Entering commands • Indexing • Types of arrays

Unit-III

Mathematics • Linear algebra • Operations on nonlinear functions • Multivariate data • Data analysis

Unit-IV

Graphics • Basic plotting function • Creating mesh and surface plots • Display images • Printing graphics • Working with graphic objects

Unit-V

Programming • Control flow • Scripts and functions

REFERENCE:

1. Amos Gilat. MATLAB- An introduction with applications. Wiley. 2013

2. Brian Hahn and Dan Valentine, Essential MATLAB for Engineers and Scientists (Fifth Edition)

3. Stormy Attaway, Matlab: A Practical Introduction to Programming and Problem Solving 4th Edition. Elsevier. 2017

4. Jim & John. MATLAB for dummies. Wiley. 2015.

COURSE OUTCOMES:

Students are able to

CO 1 To enable the students understand the procedures, algorithms, and concepts require in solving specific problems

CO 2 To enable the students to carry out simple numerical computations and analyses using MATLAB

CO 3 To familiarize the students on the basic MATLAB software

CO 4 To prepare the students to use MATLAB in their project works.

CO 5 To equip the students to utilize experimental, statistical and computational methods and tools necessary for 3D motion analysis

MAPPING (CO's and PO's)

course outcomes	Program Outcomes							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1	3	2	3			1		
2	3	2		1	1		2	2
3	3	2	3			1		3
4	3	2					3	
5	3	2	1	1	2		1	1

PST 18CT101 AERODYNAMICS IN SPORTS

COURSE OBJECTIVES:

- To impart knowledge on Theory and Experimental knowledge in the application of the aerodynamics in sports to design the high performance equipments and to optimize the performance of the athlete.

UNIT I

BASIC AERODYNMICS

Aerodynamic terminologies, aerodynamic force and moment , drag and lift, one and two dimensional flow, momentum equation, energy equation, Navier –stock equation, angular velocity.

UNIT II

POTENTIONAL AND AXISYMMETRIC (INVISCID INCOMPRESSIBLE) FLOW

Laplace equation, Bernoulli's equation for rotational flow, Fundamentals of Invicid incompressible flow, sources of flow, Non lifting and lifting of flow over a cylinder, kutta Joukowski theorem, vortex system and laws of vortex motion, incompressible flow, pitot tube equation, normal shock waves, Mach and shock waves in two dimensional flow.

UNIT III

VISCOUS FLOW AND BOUNDARY LAYER

Development of boundary layer, boundary layer equation, laminar and turbulent flow, boundary layer separation, momentum integral equation, Reynolds number, Performance factors in bicycling- Human power, drag and rolling resistance.

UNIT IV

AERODYNAMICS ON SPORTS EVENTS

Cycling aerodynamics, Factors influencing on running and running aerodynamics ,Skin suit aerodynamics, aerodynamics in cross country skiing and speed skiing. Performance factors in ski jumping, case studies ski jumping, Ski jumping aerodynamics.

UNIT V

SPORTS BALL AERODYNAMICS AND MEASURMENT

Sports Ball Aerodynamics- aerodynamics on Base ball, Golf ball, tennis ball, cricket ball, volley ball , soccer ball , magnus effect, effect of velocity and spin, Case studies,CFD simulations and wind tunnel test.

COURSE OUTCOMES:

Students are able to

CO-1 Understand and attain knowledge on Theory and Experimental knowledge of aerodynamics in sports

CO-2 Apply Theory and Experimental knowledge of aerodynamics in sports

CO-3 Design the high performance equipments and to optimize the performance of the athlete.

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	3			3						2
2		3		2						3
3			3		3	3				2

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		
2	2	3
3	1	1

PST18CT102 – SPORTS MATERIALS ENGINEERING AND DESIGN

COURSE OBJECTIVES:

- To impart knowledge on material science and advance materials for the design and manufacture of the different sports apparel and equipments to increase the athlete performance and to avoid the sports injury.

UNIT I

SPORTS EQUIPMENT AND PHILOSOPHY OF DESIGN

Materials in sports- Factors determining sports performance, role of bioengineering in sports equipment, Advanced materials in the design of sports equipment, materials selection in design of pole vaulting, Bicycle construction , relationship between advanced materials technology in designing sports equipments and performance.

UNIT II

FUNDAMENTALS OF ADVANCED MATERIALS

Composite materials , Nano and smart materials, Comparing and selecting materials , Basis of sports shoe design , Cycle mechanics from bamboo to fibre composites, Space frame Materials The wheels, Case studies and Future trends .

UNIT III

MATERIALS FOR TENNIS SQUASH RACKETS

String types, function of string in a racquet, frame stiffness loss in a string, perception of string properties, Racket mechanics: the sweet spot, Influence of materials on racket technology, Specific designs and tests on racket, frame materials, Ball construction , tennis and squash ball ,Case studies.

UNIT IV

MATERIALS IN BOATS AND BOARDS AND MOUNTAINEERING

Materials for racing hulls, Canoes and Kayaks , Surfboards, Testing ski properties , Materials in boots and bindings , Ski-sticks, Advanced materials and design in skis, materials for ropes in mountaineering, harnesses and slings karabiners, belay, descending and ascending devices, rock protection, ice climbing equipment,

UNIT V

MATERIALS FOR SPORTS BALLS AND HELMET

Materials for golf club and golf ball, cricket ball, baseball, soccer and volleyball, discus, javelin, archery, fencing and foam materials, material selection and design of helmets. Case studies on helmet materials selection.

Reference

1. Mike Jenkins, Aleksandar Subic, "Materials in sports equipment" published by Woodhead publishing.
2. Easterling**, E.A.,** Advanced Materials for Sports Equipment, Springer, 1993
3. *A. Subic,* Materials in Sports Equipment ,Volume 2 , Woodhead, 2007

COURSE OUTCOMES:

Students are able to

CO-1 Understand various kinds of materials and its properties

CO-2 Apply specific materials for the design and manufacture of the different sports apparel and equipments

CO-3 Modify suitable materials/ design to increase athlete performance and to avoid the injury

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	3			2	1	2				1
2		3	2						2	
3		2		3		3			2	1

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		
2	1	2
3	1	3

PST18CT201 - SPORTS BIOMECHANICS

COURSE OBJECTIVES

- To learn the basic idea to integrate the Medical and Engineering science to study the motion of the athlete to optimize the performance and safety.

UNIT I BASIC TERIMINOLOGY AND SKELETAL CONSIDERATIONS FOR MOVEMENT

Basic Terminologies- biomechanics versus kinesiology, anatomy versus functional anatomy, kinematics versus kinetics, statics versus dynamics, anatomical terms, movement description, Reference Systems, Measuring the Mechanical properties of Body tissues, Biomechanical Characteristics of Bone, Mechanical properties of bone, loads applied to bone, cartilage- articular cartilage, fibrocartilage, ligaments , bony articulations- the diarthrodial or synovial joint and other types of joints

UNIT II MUSCULAR AND NEUROLOGICAL CONSIDERATION FOR MOVEMENT

Muscle Tissue Properties-Irritability, Contractility, Extensibility, Elasticity, Functions of Muscle, Produce Movement, Maintain Postures and Positions, Stabilize Joints, Other Functions, Skeletal Muscle Structure-Physical Organization of Muscle, Force Generation in the Muscle-Motor Unit ,Muscle Contraction, Transmission of Muscle Force to Bone Mechanical Model of Muscle, The Musculotendinous ,Role of Muscle-Origin versus Insertion, Developing Torque, Muscle Role versus Angle of Attachment, Muscle Actions Creating, Opposing, and Stabilizing Movements, Net Muscle Actions, One- and Two-Joint Muscles, Force–Velocity Relationships in Skeletal Muscle-,Force–Velocity and Muscle Action or Load, Factors Influencing Force and Velocity Generated by Skeletal Muscle Strengthening Muscle-Principles of Resistance Training, Training Modalities, Injury to Skeletal Muscle-Cause and Site of Muscle Injury, Preventing Muscle Injury Inactivity, Injury, and Immobilization Effects on Muscle. General Organization of the Nervous System, Motoneurons, Sensory Receptors and Reflexes, Electromyography.

UNIT III FUNCTIONAL ANATOMY OF THE UPPER AND LOWER EXTREMITY

Anatomical and Functional Characteristics of the Joints of the Shoulder,Combined Movement Characteristics , Muscular Actions, Injury Potential of the Shoulder, Elbow and Radioulnar Joints, Wrist and Fingers, Contribution of Upper Extremity Musculature to Sports Skills or Movements, External Forces and Moments Acting at Joints in the Upper Extremity, Pelvis and Hip Complex, Knee Joint, Ankle and Foot Movement Characteristics, muscle Actions, Contribution of Lower Extremity Musculature to Sports Skills or Movements, Forces Acting on Joints in the Lower Extremity, Vertebral Column, Muscular Actions, Contribution of the Trunk Musculature to Sports Skills or Movements.

UNIT IV LINEAR AND ANGULAR KINEMATICS

Collection of Kinematic Data, Position and Displacement, Velocity and Speed, Acceleration, Differentiation and Integration, Linear Kinematics of Walking and Running, Linear Kinematics of the Golf Swing, Linear Kinematics of Wheelchair Propulsion Projectile Motion, Equations of Constant Acceleration, Angular Motion, Measurement of Angles, Lower Extremity Joint Angles, Representation of Angular Motion Vectors, Angular Motion Relationships, Relationship between Angular and Linear Motions, Angle–Angle Diagrams, Angular Kinematics of Walking and Running, Lower Extremity Angles, Angular Kinematics of the Golf Swing, Angular Kinematics of Wheelchair Propulsion. Case studies.

UNIT V LINEAR AND ANGULAR KINETICS

Force**,** types of forces,laws of motion,Representation of Forces Acting on a System, Special Force Applications, Linear Kinetics of Locomotion, Linear Kinetics of the Golf Swing , Linear Kinetics of Wheelchair Propulsion, case studies,torque, types of torque, Newton's Laws of Motion: Angular Analogs, centre of mass, Rotation and Leverage, Representation of Torques Acting on a System, Analysis Using Newton's Laws of Motion, Special Torque Applications, Cinematography and video analysis.

References:

1. Hamill, J & Knutzen, K , Biomechanical Basis of Human Movement. Lippinncott, Williams and Wilkens, 4th Ed., (2015)

2. Roger Bartlett, Introduction to Sports Biomechanics, Taylor & Francis, 2002

3. Hay, J. (1978). The biomechanics of sport techniques. (2nd. ed.). Englewood Cliffs: Prentice-Hall.

4. Hay, J. & Reid, J. (1982). The Anatomical and Mechanical Bases of Human Motion. Englewood Cliffs: Prentice-Hall.

5. Nordin, M. & Frankel, V. (1990). Basic Biomechanics of the Musculoskeletal System, Philadelphia: Lea & Febiger.

6. Northrip, J., Logan, G. & McKinney, W. (1983). Analysis of Sport Motion. (3rd. ed). Dubuque: William C. Brown.

COURSE OUTCOMES:

Students are able to

CO-1 Understand the concepts of biomechanics in sports

CO-2 Modify suitable body positions and movements to increase athlete Performance and to avoid injury.

CO-3 Optimize the performance and safety of athletes using the principles of Biomechanics.

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	3	1		2						
2		2		3						
3			3	2		3				

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		
2	1	2
3	1	3

PST18CT202 - MEASUREMENT AND INSTRUMENTATION IN SPORTS ENGINEERING

COURSE OBJECTIVES:

- To apply the knowledge of the electronic and sensor technology to measure performance of the athlete and to attain the biological data during the performance.

UNIT I INTRODUCTION OF SPORTS ENGINEERING

Definition, purpose, advantages and applications; General principles and purpose of instrumentation in sports, Workflow of instrumentation and business aspects; Technological and social impacts on sports.

UNIT II SENSORS AND TRANSDUCERS

Sensors, data transfer and signal processing,Systematic of sensors and transducers Mechanics and design of sensor,Wireless technology, A/D boards and software systems Signal processing, fractal geometry, Design and problems of measurement chains.

UNIT III INSTRUMENTATION OF EQUIPMENT

Instrumentation of Equipment -Workflow of instrumentation, constraints, and sporting rules , Product overview, Definition and identification of performance parameters, Optimisation of training and biofeedback, Calculation and graphical representation of vector diagrams and instantaneous centres of pressure using software , Design of instrumented equipment, sensor locations and balancing, Application of instrumented equipment and case reports, Instrumentation for testing of equipment

UNIT IV INSTRUMENTATION OF THE ATHLETE

Overview of instrumentation systems, Worn instrumentation and constraints, Kinematic systems with skin markers (EGM, video, infrared, ultrasound, electromagnetic), Application of kinematic systems and case reports, Performance analysis, Golf swing analysers.

UNIT V INSTRUMENTATION OF THE ENVIRONMENT AND SPORTS FACILITIES

Instrumentation of the environment and sports facilities, Video systems and software (Dartfish, SiliconCoach, Simi),Hawk Eye, Infrared contact measurement (Hotspot), Application of video systems and case reports , Performance analysis .

Course Outcomes:

- To apply to and to attain the biological data during the performance.

References

- ***1..*** Franz Konstantin Fuss**,** Aleksandar Subic**,** Sadayuki Ujihashi "*The Impact of Technology on Sport II"* Taylor and Francis 2007
- *2. Craig J.J., " Introduction to Robotics Mechanics and Control ", Addison-Wesley, 1999.*
- *Murty, D.v.s. Transducers And Instrumentation Prentice Hall of India, 2008*

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		
2	1	2
3	1	3

2	**COURSE OUTCOMES: Students are able to**	
	CO-1	Gain knowledge of the electronics and sensor technology
	CO-2	Measure performance of the athlete error free
	CO-3	increase athlete performance and to avoid injury by providing with feed to the players/athletes

3 **MAPPING (CO's and PO's)**

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	3					2				
2		2								
3			3	3		3				

SET 1501 - FUNDAMENTALS OF SPORTS TECHNOLOGY

COURSE OBJECTIVES:

At the end of the course, students will be able to: Appreciate the different technological advances available for application in sports domain.

UNIT I SPORTS TECHNOLOGY BASIC CONCEPTS

History of Engineering in Sports, The relationship between sports engineering and sports science, need , scope and objectives , advantages and applications of Sports Technology, Sports Technology terminologies, carrier opportunities.

UNIT II IMPACT OF ENGINEERING IN SPORTS

Concepts of human engineering , Impact of various modern technologies in Materials engineering, role of technology in equipments design and development, importance of Ergonomics in sports equipments. Recent technological advancements in various sports goods.

UNIT III COMPUTER AND INSTRUMENTATION IN SPORTS

Role and importance of computer and instrumentation technology in various sports, computer simulation for sports, applications and advantages, video technology, hawk-eye technology in sports.

UNIT IV VARIOUS ENGINEERING APPLICATIONS IN SPORTS

Aerodynamics and sports applications, Nano technology and its sports applications, sensor technology and its sports applications, software based sports performance analysis, Sport analytics, and Internet of Things.

UNIT V BUSINESS AND RESEARCH APPLICATIONS IN SPORTS ENGINEERING

Entrepreneurial skills and business opportunities in sports, Research opportunities in sports technological research, Recent Research trend in various sports equipment design, ball sports, tennis racket technology, and water sports, various Sports Engineering research groups, and journals in sports technology.

Course Outcomes:

Students will be able to appreciate the opportunities available in the domain of sport technology, innovation and entrepreneurship, and be able to act upon it.

Reference.

1. An overview of sports engineering: history, impact and research, Zahari Taha, Mohd Hasnun Arif , Hassan Anwar P.P., Abdul Majeed , Mohd Azri, Aris Nina, Nadia Sahim, Movement, Health & Exercise, 2, 1-14, 2013
2. Ross, S. (2012). Sports technology. Mankato, Minn: Smart Apple Media.
3. Fuss, F. K. (2014). Routledge handbook of sports technology and engineering. New York: Routledge.
4. Ciletti, D., & Chadwick, S. (2012). Sports entrepreneurship: Theory and practice. Morgantown, WV: Fitness Information Technology.

2	**COURSE OUTCOMES: Students are able to**	
	CO-1	Acquire knowledge on • Sports Science and Sports Engineering • Applications of Engineering in Sports
	CO-2	Understand engineering concepts and techniques used in different sports .
	CO-3	Understand business opportunities in sports engineering.

3 **MAPPING (CO's and PO's)**

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	3									
2	3	2					1		2	
3		3								1

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	2	
2		1
3	3	

ST1512 MOTOR SPORTS APPLICATIONS

COURSE OBJECTIVES:

To impart knowledge about racing vehicle behavior and various technologies used in motorsports.

UNITI: RACE CAR DESIGN AND DEVELOPMENT

Problems Imposed By Racing, Racing Objective, "g-g" Diagram.Constraints And Specifications ,Performance, Handling, Structure.Driver Accommodation And Safety, Tires. Adjustable Features, Preliminary Design And Analysis.Driver-Vehicle Relationship.Desirable Vehicle Characteristics, Fundamentals Of Testing.Track Test Program Planning And Test Methodology.General Notes On Development–Circular Skid Pad Testing.

UNITII: RACE CAR AERODYNAMICS

Aerodynamic characteristics, Aerodynamic Force And Moment, Race Car Drag Components, Drag Improvement And Estimation. aerodynamic Development of a Vehicle,Ground Effects And Ground-Plane Simulation In Race Car Applications.Spoiler, Dams, Wings Effectiveness Of Wings In Steady State Cornering.High Lift Devices-Flaps And Slats. Flow ControlDevices-Dams ,Fences, Vanes, Skirts, Spoilers.Vortex Creating Devices-Ledges, Edges, Cusps, Lips.Pressure Change Creation Devices-Perforations, Vents, Bleeds, Scoops, Seals.Air-Foil Devices-Slats, Flaps, End Plates, Cuffs, Fillets, Trips.Active Flow Control Devices-Internal Airflow.

UNITIII: RACE CAR CHASSIS

Conditions For Traversing A 90° Corner, Principle Chassis Tuning Items.Effects Of High Speed Braking, Cornering, Combined Braking Cornering.Steady State Cornering, Acceleration Out Of A Corner, Straight Line Acceleration.Throttle Behaviour, Steering Wheel Force And Kick Back.Moving CG Position, Roll Center Position Changing Anti-Pitch Geometry.Chassis Steering Axis Geometry, Changing Camber.Chassis Ride Roll

Characteristics, Chassis Track Width.Chassis Ride Spring Rate, Tires And Rims, Adjusting Roll Stiffness And Roll Stiffness Distribution

UNITIV: RACE CAR SUSPENSION SYSTEM

Front Suspension-General Design Issues, Camber Effects.SLA Suspension, McPherson Struts.Independent Rear Suspensio-Trailing Arm Types, Instant Axis Concept.SLA Rear Suspension, Beam Axle Rear Suspensions.Torque Tube And Torque Arm Suspension, Decoupled Rear Axle SuspensionSuspension Springs-Torsion Springs, Coil Springs, Progressive Rate Coil Springs.Leaf Springs, Types, Installation Consideration, Inter Leaf Friction, Spring Fatigue. Damping In Racing-Ride/Handling Compromise, Steering Activity, And Transient Manoeuvring, Bump Damping And Rebound Damping.

UNITV: RACE CARDRIVES AND BRAKING SYSTEMS

Merits Of Front, Rear And Four-Wheel Drive In Racing.Differentials Used In Racing-Open Differentials, Locked (Spool), Limited Slip Differentials.Traction Control And Other Electronic Improvements In Racing..Mechanical Components In Braking System.Limitations And Considerations Of Braking In Racing.Brake Boost, Effects Of "g" Force On Brake Fluids. Brake Hydraulics,Ventilation.Brake Distribution, ABS In Racing.arbon-Carbon discs.

Course Outcomes:

To impart knowledge about racing vehicle behaviour and various technologies used in motorsports.

Reference

1. William F.Milliken and Douglas L.Milliken, "Race car vehicle dynamics", 11th edition, SAE, 1995.

2. Peter Wright, "Formula 1Technology",2001. Reference Books/Other Reading Material

3. Thomas D. Gillespie, "Fundamental of Vehicle Dynamics, Society of Automotive Engineers", USA 1992.

4. Wolf-Heinrich Hucho, “Aerodynamics of road vehicles”, 4th edition, 2000

5. Jörge Segers “Analysis Techniques for Race car Data Acquisition”, SAE – Publications, 2007

6. www.sae.org

7. www.annualreviews.org/aronline

2	**COURSE OUTCOMES: Students are able to**	
	CO-1	Understand the fundamentals of racing vehicle characteristics.
	CO-2	. Understand aerodynamic requirements in racing vehicles
	CO-3	Understand the concepts of chassis behavior of racing vehicles.
	CO-4	Gain knowledge about the concepts of suspension characteristics of racing vehicles.
	CO-5	Understand the problems faced in drives and braking systems in motorsports
3	**MAPPING (CO’s and PO’s)**	

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	3	2								
2		3	2							
3		2	3							
4			2							1
5							3		2	

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		2
2	2	
3		3
4		
5	3	

ST 1509 - APPLIED BIOMATERIALS IN SPORTS TECHNOLOGY

COURSE OBJECTIVES:

- To develop knowledge in the application of different biomaterial implantation for athlete in the sports.

UNIT I INTRODUCTION

Definition of biomaterials, requirements of biomaterials, classification of biomaterials, Comparison of properties of some common biomaterials. Effects of physiological fluid on the properties of biomaterials. Biological responses (extra and intra-vascular system). Surface properties of materials, physical properties of materials, mechanical properties.

UNIT II METALLIC IMPLANT MATERIALS

Metallic implant materials - Stainless steel, Co-based alloys, Ti and Ti-based alloys. Importance of stress-corrosion cracking. Host tissue reaction with biometal, corrosion behavior and the importance of passive films for tissue adhesion. Hard tissue replacement implant: Orthopedic implants, Dental implants. Soft tissue replacement implants: Percutaneous and skin implants, Vascular implants, Heart valve implants-Tailor made composite in medium.

UNIT III POLYMERIC IMPLANT MATERIALS

Polymeric implant materials - Polyolefins, polyamides, acrylic polymers, fluorocarbon polymers, silicon rubbers, acetals. (Classification according to thermosets, thermoplastics and elastomers). Viscoelastic behavior: creep-recovery, stress-relaxation, strain rate sensitivity. Importance of molecular structure, hydrophilic and hydrophobic surface properties, migration of additives (processing aids), aging and environmental stress cracking. Physiochemical characteristics of biopolymers. Biodegradable polymers for medical purposes, Biopolymers in controlled release systems. Synthetic polymeric membranes and their biological applications.

UNIT IV CERAMIC IMPLANT MATERIALS

Ceramic implant materials- Definition of bioceramics. Common types of bioceramics: Aluminium oxides, Glass ceramics, Carbons. Bioresorbable and bioactive ceramics. Importance of wear resistance and low fracture toughness. Host tissue reactions: importance of interfacial tissue reaction (e.g. ceramic/bone tissue reaction). Composite implant materials - Mechanics of improvement of properties by incorporating different elements. Composite theory of fiber reinforcement (short and long fibers, fibers pull out). Polymers filled with osteogenic fillers (e.g. hydroxyapatite). Host tissue reactions.

UNIT V BIOCOMPATIBILITY & TOXICOLOGICAL SCREENING OF BIOMATERIALS

Biocompatibility & toxicological screening of biomaterials-definition of biocompatibility, blood compatibility and tissue compatibility. Toxicity tests: acute and chronic toxicity studies (in situ implantation, tissue culture, haemolysis, thrombogenic potential test, systemic toxicity, intracutaneous irritation test), sensitization, carcinogenicity, mutagenicity and special tests.

Sterilisation techniques - ETO, gamma radiation, autoclaving. Effects of sterilization on material properties.Testing of biomaterials/Implants - *In vitro* testing (Mechanical testing): tensile, compression, wears, fatigue, corrosion studies and fracture toughness. *In-vivo* testing (animals): biological performance of implants. *Ex-vivo* testing: *in vitro* testing simulating the *in vivo* conditions. Standards of implant materials.

COURSE OUTCOMES:

- Able to apply knowledge in the application of different biomaterial implantation for athlete in the sports medicine.

Reference

1. *J B Park, Biomaterials - Science and Engineering, Plenum Press , 1984.*
2. *Sujata V. Bhat, Biomaterials, Narosa Publishing House, 2002.*
3. *Jonathan Black, Biological Performance of materials, Marcel Decker, 1981*
4. *C.P.Sharma & M.Szycher, Blood compatible materials and devices, Technomic Publishing Co. Ltd., 1991.*
5. *Piskin and A S Hoffmann, Polymeric Biomaterials (Eds), Martinus Nijhoff Publishers. (Dordrecht. 1986)*
6. *Eugene D. Goldbera , Biomedical Ploymers, Akio Nakajima.*
7. *A . Rembaum & M. Shen, Biomedical Polymers, Mercer Dekkar Inc. 1971*
8. *Lawrence Stark & GyanAgarwal , Biomaterials*
9. *L. Hench & E. C. Ethridge, Biomaterials - An Interfacial approach.*

2

COURSE OUTCOMES: Students are able to

CO-1	Understand the significance of various kinds implant of materials and its properties
CO-2	Apply specific implant materials for defective human parts
CO-3	Gain knowledge on biocompatibility

3

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	3									1
2		3	3			2				
3							3		1	

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		2
2	2	
3		3

Core/PST 18CT102 – SPORTS MATERIALS ENGINEERING AND DESIGN

COURSE OBJECTIVES:

- To impart knowledge on material science and advance materials for the design and manufacture of the different sports apparel and equipments to increase the athlete performance and to avoid the sports injury.

UNIT I SPORTS EQUIPMENT AND PHILOSOPHY OF DESIGN

Materials in sports- Factors determining sports performance, role of bioengineering in sports equipment, Advanced materials in the design of sports equipment, materials selection in design of pole vaulting, Bicycle construction , relationship between advanced materials technology in designing sports equipments and performance.

UNIT II FUNDAMENTALS OF ADVANCED MATERIALS

Composite materials , Nano and smart materials, Comparing and selecting materials , Basis of sports shoe design , Cycle mechanics from bamboo to fibre composites, Space frame Materials The wheels, Case studies and Future trends .

UNIT III MATERIALS FOR TENNIS SQUASH RACKETS

String types, function of string in a racquet, frame stiffness loss in a string, perception of string properties, Racket mechanics: the sweet spot, Influence of materials on racket technology, Specific designs and tests on racket, frame materials, Ball construction , tennis and squash ball ,Case studies.

UNIT IV MATERIALS IN BOATS AND BOARDS AND MOUNTAINEERING

Materials for racing hulls, Canoes and Kayaks , Surfboards, Testing ski properties , Materials in boots and bindings , Ski-sticks, Advanced materials and design in skis, materials for ropes in mountaineering, harnesses and slings karabiners, belay, descending and ascending devices, rock protection, ice climbing equipment,

UNIT V MATERIALS FOR SPORTS BALLS AND HELMET

Materials for golf club and golf ball, cricket ball, baseball, soccer and volleyball, discus, javelin, archery, fencing and foam materials, material selection and design of helmets. Case studies on helmet materials selection.

Reference

1. Mike Jenkins, Aleksandar Subic, "Materials in sports equipment" published by Woodhead publishing.
2. Easterling**, E.A.,** Advanced Materials for Sports Equipment, Springer, 1993
3. *A. Subic,* Materials in Sports Equipment ,Volume 2 , Woodhead, 2007

2	**COURSE OUTCOMES: Students are able to**	
	CO-1	Understand various kinds of materials and its properties
	CO-2	Apply specific materials for the design and manufacture of the different sports apparel and equipments
	CO-3	Modify suitable materials/ design to increase athlete performance and to avoid the injury.

3 **MAPPING (CO's and PO's)**

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	3			2	1	2				1
2		3	2						2	
3		2		3		3			2	1

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		
2	1	2
3	1	3

RULES REGULATION AND TECHNIQUES OF SPECIFIED SPORT/GAME – 17204

UNIT - I

Dimensions of play fields - measurements - layout – markings. Equipmentsspecifications – importance

UNIT - II

Rules and regulation and their interpretation

UNIT - III

Officiating - duties - powers of the referee / umpires - mechanism of officiating -

UNIT - IV

Organizational set up - drawing fixtures - knock out - league - seeding -

UNIT - V

Competitions : state level – National level -

REFERENCES:

1. Law of the game /FB/ VB/ HB/ ATHLETICS

2. Rules and regulations of /FB/ VB/ HB/ ATHLETICS

3. International Academy Part I & Part II

COURSE OUTCOMES: Students are able to

CO-1 To understand the rules of the specific game to play better

CO-2 To prevent from injuries

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	2			1					3	
2			1					2		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		
2	1	2

SCIENCE OF SPORTS TRAINING -I - 17203

UNIT - I

Sports training - meaning - definition - aim - objective - characteristic

UNIT - II

General principles - over load - specificity- reversibility over load - symptoms - recovery

UNIT - III

Physical fitness- meaning definition- health related – skill related speed- meaning importance – types- flexibility – importance - types

UNIT – 1V

Motor qualities - meaning definition - Strength: Definition - types – importance

UNIT - V

Endurance: definition - types - importance – coordinative abilities

REFERENCE

1. Frank W. Dick, Sports training principles, London, Lepus Book Co.,
1980

2. Hardyal Singh Science of Sports training, DVS publication, New Delhi,
1995

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1		2		3					1	
2	1						2			

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		1

6BCC5 TEAM COACHING AND MATCH ANALYSIS OF SPECIFIC SPORT /GAME

UNIT – I

Organization - routine - relation - repetition - personalized coaching – player coach relationship - role of the coach - coached practice game

UNIT - II

Team meeting - Pre competition meeting - half time meeting - post match meeting - purpose - fluid replacement - diet - pre – during - after the match

UNIT - III

Match analysis - age - sex - equipment - psychological factors - environment - diet - climate - ground condition - medical assistance

UNIT - IV

Match analysis - physical fitness - technical - tactical - system - strategies - opponent's team - key player - dangerous players - strong and weak points of players - opponents

UNIT - V

Match analysis - aim - objectives - methods - system - computer assistance - execution - feedback - chart - notational analysis

REFERENCES :

1. Teaching sports skill, Eric Worthington, Lepus book, London
2. FIVB/FIFA/IHF/IAAF coaches manual
3. FIVB/FIFA/IHF/IAAF Rules book
4. International Academy - Part I & Part II

COURSE OUTCOMES:

Students are able to

- Evaluation plays vital role in success of any program, this approach towards the competition is scientific one.
- Understanding the importance of assessment thereby enhancing the performance by redesigning

MAPPING (CO's and PO's)										
Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1		1				1		2		
2		1	1			1				

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		2
2		

17304 TECHNIQUE AND TACTICS OF SPECIFIED SPORTS/ GAMES

UNIT – I

Technique - Definition - Technique without equipment / ball – positioning – movements - Principles of learning

UNIT – II

Technique with equipment/ball – simple to complex exercises - positioning - movements - technical training- Technical training - simple - complex - pressure - training under physical aspects

UNIT - III

Tactics – meaning- definition- types – offensive- defensive

UNIT - IV

Tactical training - Mental training to improve technique & tactics - Combining different technique

UNIT - V

Individual tactics- team tactics – group tactics - Development of technically superior player - reaction time – movement time - response time - reflex time

REFERENCES:

1. Coaching manual by S. Subramanian & Richerd Bate Malayasia
2. FIVB/FIFA/IHF/IAAF coaches manual
3. FIVB/FIFA/IHF/IAAF Rules book.
4. International sports Academy – Part I & Part II

COURSE OUTCOMES:

Students are able to

- Help to learn skills in proper form and execute
- By learning this technique the performance could be enhanced to play competitive sport, this learning is important and it serves as basic.

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	2					1			3	1
2	2				1	3		2		3

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		
2		2

M.SC SPORTS COACHING

PSS18CT402 TEST AND MEASUREMENT IN ADVANCED TRAINING AND COACHING

UNIT- 1:-

Meaning of measurement & evaluation - inter relationship of measurement & evaluation - Basic principle of measurement & Evaluation - Need for Selecting appropriate measurement & evaluation in Coaching - Criter ia for selecting Measurement & Evalua t ion - Technical standards - Objectivity, Reliability, Validity, Norms - Admin istrative consideration: Equ ipment, time, money, utility, facility, feasibility.

UNIT - II:-

Test of Physical Performance Speed, Agility, Balan ce, Strength, endurance, flexibility, California perceptual motor ability, and Generality of components, Test of Physical Fitness: Basic Fitness test AAHPER Youth fitness test - Physical fitness index, National Physical Efficiency Tests. Indian Motor Fitness Test, Test for High School and college men, Kraus Weber Test

UNIT - III:-

Motor Fitness Test : J.C.R. Test - Origin Motor fitness Test- California Motor Fitness Test - Motor Ability Test - Barrow motor ability Test - carpenter motor ability test- scott motor ability Test - Latchaw motor ability test

UNIT IV:-

Motor Educability Test OPNA Balance motor educability test - Johnson Metheny motor ability test - Cardio - Vascular Test: Callageher & Brouha Harvard step for secondary boys - Tuttle pulse ratio test, Schneider Cardio - vascular test - postural test - IOWA postural test - Woodruff body alignment posture test - foot print angel test

UNIT - V:- Test of Specific Sports Skills Ba dminton - Miilar wall Vally test- French short service test - Basket ball - Knox basketball test, Leilich Basket ball Test - Hockey - Field Hockey Test, Frieda! Field Hockey test - Soccer - Warner Soccer skill test - AAPHER Football skill test - Tennis test, Broer - Miller Forehead, backhand drive test, Volleyball - LIBA - STAUFF Test, Brady Volleyball test

Reference books:

- Nilgose, Erle : Evaluation in Health Education and Physical Education", New York, McGra -Eill Book Co., Inc .
- Cureton, Thomas K. Ph ysical Fitness Appraise and Guidence - ST.Luis, Themosby company, 1947.
- Bovard Jhon F. Frederich We., Hagman, Parecia E., "Test and Measurement in Physical Education" Philadelphia, W.B., Souners Company, 1949.
- Campell, W.R. and Tauker, N.M. , "An Introduction to Test and Measurement in Physical Education", London, C. Bellk & Sons LTD., 1967 .

COURSE OUTCOMES:

Students are able to

CO-1 Understanding the importance and significance of measurement and its techniques to collect data for future analysis.

CO-2 This knowledge will help to reschedule the training programme based on the results

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	2							1		2
2				3				1		

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1		
2		2

PSC18DE001 TESTING OF PLAYERS FITNESS

UNIT-I

Test - aim - importance - need - meaning - criteria for test - measurement – need - placement - importance - validity-Reliability - objectivity - norms - administrative feasibility

UNIT -II

Aerobic power - field test - cooper test - Harvard step test -beep test - lab test - maximal oxygen uptake test - Astrand Rhyming test - Physical working capacity 170- recommendation

UNIT-III

Anaerobic alactic power - muscular strength field test - 1RM - lab test - cable tensiometry - dynamometry - computer assisted iso kinetic method – recommendation

UNIT-IV

Power and alactic work capacity - field test - standing broad jump - vertical jump - 40yds sprint - lab test - 10 sec bicycle sprint - macariakalamen power test - recommendation

UNIT- V

Anaerobic lactic power - field test - 400 rots run - lab test - 60 sec bicycle sprint - recommendation - flexibility - sit and reach test - bend and reach test - body composition test – recommendation

REFERENCE:

1. Reilly .T and Thomas " A motion analysis of work rate in differenct positional role on professional football play , Journal of Human movement studies Vol.-2 1976
2. Sinclair david" Human growth after birth, Oxford medical pub: London 1978 .
3. Universal Gym Machine training Manual 1978, Appendi x – B
4. Aust ralian representativ e, Journal of sports Med. 1977
5. Saltin. B et.al, Int er mittent Exercise physiology Karger, Basel 1976 .

COURSE OUTCOMES:

Students are able to

CO-1 Understand the concept of testing to analyze the performance

CO-2 By updating the knowledge in testing, redesigning the training program Could be framed

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	1		2					1		
2		2					1			2

MAPPING (CO's and PSO's)

Course Outcomes (CO)	Program Specific Outcomes (PSO)	
	1	2
1	1	
2		

PSM18AE101 BUSINESS COMMUNICATION

Unit–I: Basic forms of communication

Need for Communication; Forms of Communication Self-Development and Communication: Factors Affecting Communication; Essentials of good Communication Skills.

Unit–II: Corporate communication

Types of Corporate Communication; Barriers of Communication: **Principles of Effective Communication** - The Effective Communication Skills Questionnaire; Humour in Communication; Interpersonal Communication; Intrapersonal Communication; Understanding Audience Psychology.

Unit–III: Writing skills: Business letters

Written Communication—Significance In Business; Essentials of a Business Letter; Parts of a Business Letter; Forms of a Business Letter; Types of Business Letters; Writing a Good Business Letter. **Internal Communication -** Letters within the Organization; Letters to Staff; Circulars and Memos; Office Notes, Motivational Communication; Letters from Top Management; Writing without Hurting; Reminders and Follow-up; Employee Newsletters. **Report writing** - Types of Reports; Essentials of Good Report Writing; Committee Reports; Annual Reports.

Unit- IV: Public Relations

Definition of Public Relations; Benefits of PR in Sports; Tools-Media; Press Release; Press Conferences; Media Briefings; Non-media initiatives; How to manage media.

Unit-V: Sports Journalism & Media

Media as a Vehicle; Media as a Dashboard; Evolving nature of Sports Media in India; Opportunities in Sports Journalism; Big Data in Media.

References

1. Effective communication- Urmila Rai and S.M. Rai (Himalaya Publishing House).
2. Business Communication-Doctor and Doctor (Sheth) Publishers Pvt. Ltd.)
3. Public Relations – A Case Based Approach – Jery Hendrix & Darrell C. Haynes.
4. The Significance of Sponsorship as a Marketing Tool in Sports Events – Oladunni Roselyn Abiodun

COURSE OUTCOMES:

Students will be able to

CO-1 Understand the basics of Communication

CO-2 Communicate effectively through different Medias

CO-3 Realize the benefits of Public Relations

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	2			1				2		
2	2		2			2			3	2
3	2	2			2			2		2

1 – Low 2-Medium 3- High

MAPPING (CO's AND PSO's)

Course Outcomes	**Program Specific Outcomes**	
	1	**2**
1	2	1
2	2	
3	2	1

1 – Low 2- Medium 3-High

PSM18DE103 SPORTS MARKETING

Unit-I

Sports marketing: Definition – Marketing Myopia in Sport – Uniqueness of Sports Marketing – Model of the Sports Industry – Implementation of Sports Marketing Programme.

Unit-II

Perspectives in Sports Consumer Behavior: Environmental Factors – Individual Factors – Decision Making for Sports Involvement – Role of Research in Sports Marketing: Types of Primary Market Research – Common Problems in Sports Marketing Research.

Unit-III

The Sports Product: Its Core and Extensions – Key Issues in Sports Product Strategy – Managing Sports Brands: Benefits and Development of Brand Equity – Sales: Definition – Typical Sales Approaches Used in Sports – Selling Sports to the Community.

Unit-IV

Pricing Strategies: The Basics of Pricing – Core Issues – Special Pricing Factors – Advertising Media for Sports – Promotional Concepts, Practices and Components – Sponsorship: Definition – Growth of Sponsorship – Evaluating and Ensuring Sponsorship Effectiveness – Selling the Sponsorship – Ethical Issues.

Unit-V

Place/Product Distribution: Placing Core Products and their Extensions – The Facility – Marketing Channels – The Product-Place Matrix – Electronic Media Landscape – Media Impact on Sport Public Relations – Integrating Sales, Promotion, Sponsorship, Media and Community Relations – Cross Impacts among the Five P's – the Legal Aspects of Sports Marketing.

References:

1. *Bernard J Mullin, Stephen Hardy, William A Sutton, Sport Marketing, Human Kinetics.*

COURSE OUTCOMES:

Students are able to

CO-1 Identify the Uniqueness of Sports

CO-2 Understand the Behaviour of Sports Consumers

CO-3 Bring out the effective Strategies for Sports Marketing

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	2			1	2			1		
2	1		2					2	2	2
3	1	2		1	2	3				3

1 – Low 2-Medium 3- High

MAPPING (CO's AND PSO's)

Course Outcomes	**Program Specific Outcomes**	
	1	**2**
1	3	2
2	2	2
3	2	2

1 – Low 2- Medium 3-High

PSM18DE108 SPORTS MEDIA & EVENT MANAGEMENT

UNIT 1

SPORTS MEDIA- Definition of Media - Introduction to different Sports Media – Impact of Sports Media – future of media.

UNIT 2

SPORTS CHANNELS- Introduction to Sport Communication - Careers in Sport Related Fields - Sport Publishing- Electronic-New Media. -Popular Sports Channels Operating in India.

UNIT 3

COMPREHENSIVE STUDY ON DIFFERENT SPORTS CHANNELS- Profile - Top Management- Functional Departments - Work Culture- Career Opportunities- Telecast rights for major Sporting Events- Program Mix- Advertising Opportunities.

UNIT 4

SPORTS JOURNALISM- Introduction- Scope- News - Value of Sports- Essential Qualification of Sports Writer -Presenter.

UNIT 5

EVENT MANAGEMENT- Meaning of Events, Event Management, Designing an Event- 5C's (Conceptualisation, Costing, Canvassing, Customisation, Carrying out). Key Elements of Events-Event Infrastructure- Organisers- Clients- Target Audience- Media- Venue - Role of Mass Media in Event Promotion.

References:

1. Hall, Nichols, Moynahan, and Taylor (2007). Media Relations in Sport – 2 nd Ed. Morgantown, WV: Fitness Information Technology.
2. Managing Sporting Events – Jerry Solomon (Human kinetics)
3. Sports Journalism – Philip Andrews (Sage Publication)

COURSE OUTCOMES(COS):

Students will be able to

CO-1 Know the concept of Sports Media

CO-2 Acquire in–depth knowledge on Sports Journalism

CO-3 Understand the types of Channels available for Event Management

MAPPING (CO's and PO's)

Course Outcomes	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
1	1				1			2		2
2	2	2			1			2		3
3	2		2	2		1			3	

1 – Low 2-Medium 3- High

MAPPING (CO's AND PSO's)

Course Outcomes	**Program Specific Outcomes**	
	1	**2**
1	3	2
2	2	3
3	2	3

1 – Low 2- Medium 3-High

Tamil Nadu Physical Education and Sports University, Chennai

Department of Sports Management

PROPOSAL FOR SKILL DEVELOPMENT PROGRAMME

Name of the Programme	**Event Management**
Beneficiaries	**Final Year UG/PG Students**
Duration	**10 Hours**

1.0 Introduction:

Event Management is the application of project management to the creation and development of large-scale events such as festivals, conferences, ceremonies, weddings, formal parties, concerts, or conventions. The **event manager** is the person who plans and executes the event, taking responsibility for the creative, technical, and logistical elements. This includes overall event design, brand building, marketing and communication strategy, audio-visual production, script writing, logistics, budgeting, negotiation, and client service.

2.0 Types of Events:

Parties, Awards, Launches, VIP events, Exhibitions, Sports events, Meetings, Road shows, Conferences & Workshops, Festivals, Concerts & Fashion events, etc.,

3.0 Functions of Event Management:

3.1 Pre-Event Preparation

3.2 Event Execution

3.3 Post-Event Evaluation

4.0 Significance of Learning Event Management Skills:

This training provides practical guidelines to follow a systematic approach and to keep track of all the actions related to the pre- and post-event activities according to deadlines. During the course, the students will acquire the event management skills that will enable them to invest less effort in managing events and travel arrangements in future, and still be able to integrate the activities with their day-to-day business operations.

3.6 – SPORTS MARKETING

Unit-1:

Sports marketing: Definition – Marketing Myopia in Sport – Uniqueness of Sports Marketing – Model of the Sports Industry – Implementation of Sports Marketing Programme.

Unit-2:

Perspectives in Sports Consumer Behavior: Environmental Factors – Individual Factors – Decision Making for Sports Involvement – Role of Research in Sports Marketing: Types of Primary Market Research – Common Problems in Sports Marketing Research.

Unit-3:

The Sports Product: Its Core and Extensions – Key Issues in Sports Product Strategy – Managing Sports Brands: Benefits and Development of Brand Equity – Sales: Definition – Typical Sales Approaches Used in Sports – Selling Sports to the Community.

Unit-4:

Pricing Strategies: The Basics of Pricing – Core Issues – Special Pricing Factors – Advertising Media for Sports – Promotional Concepts, Practices and Components – Sponsorship: Definition – Growth of Sponsorship – Evaluating and Ensuring Sponsorship Effectiveness – Selling the Sponsorship – Ethical Issues.

Unit-5:

Place/Product Distribution: Placing Core Products and their Extensions – The Facility – Marketing Channels – The Product-Place Matrix – Electronic Media Landscape – Media Impact on Sport Public Relations – Integrating Sales, Promotion, Sponsorship, Media and Community Relations – Cross Impacts among the Five P's – the Legal Aspects of Sports Marketing.

References:

1. *Bernard J Mullin, Stephen Hardy, William A Sutton, Sport Marketing, Human Kinetics.*

M.Sc. SPORTS PSYCHOLOGY & SOCIOLOGY

MASOC 302: ENVIRONMENTAL SOCIOLOGY

UNIT I Environmental Sociology, Nature and Scope, Importance of Environmental Sociology

UNIT II Environment and Society: Population, organization, environment and technology. Poverty and environment.

UNIT III Gender and Environment – Eco-feminism - Women and water resource management.

UNIT IV Environment and Health: Environmental deterioration and health problems, environmental degradation and diseases.

UNIT V Environmental problems: Land, Air, Water – Deforestation and consequences - Environmental protection, Environmental laws in India.

REFERENCES: 1.

1.John A.Hannigan, Environmental Sociology, Routedge, London, 1995
2. RamachandraGuha (Ed), Social Ecology, Oxford University Press, Bombay, 1994.
3. Carolyn Merchant (Ed), Ecology, Key concepts in critical theory, Rawat Publications, New Delhi, 1996.

PSP18CT301: FUNDAMENTALS OF COUNSELING SKILLS

UNIT I Introduction: Definition – Development and goals- History and Current trends in counseling – Counselor – the nature of counselor's work - counselee relationship - counseling process: Steps – purposes of counseling - scope of counseling – characteristics of effective counseling -

UNIT II Approaches to Counseling: Directive, Non-directive, Psychoanalytic, Humanistic, Reciprocal inhibition technique, Eclectic approach - Basic Counseling Theories – Psychoanalytic theory, Adlerian theory, Existential theory, person centered theory, gestalt theory- Counselling in India - legal and ethical issues: ethical issues – ethical dilemmas – legal concerns of counselor.

UNIT III Special areas: Family counseling, students counseling, parental counseling, educational, vocational and career counseling - Counseling Interview: Communication, verbal,

nonverbal, interview, techniques of interview, relationship technique, problem identification and exploration, sharing, transference, counter transference. - Counseling the special population - global counseling and trauma counseling

UNIT IV Professional Preparation & Training: Selection, skills, counseling as a profession, desirable characteristics - Modern Trends: Career guidance, Functions of counselor, stages of counseling - Techniques: Egan's Model, Interviews, testing-– Mastering the techniques of counseling :

UNIT V Group Counseling – Definitions — values of group Counseling - Group therapy – Training & Sensitivity groups – Group process and group dynamics - Group Counseling and Group therapy; Group vs. Individual Counseling; Types of groups - Issues in Group Counseling.

REFERENCE:

1. Lewis E. Patterson and Elizabeth Reynolds Welfel (2000). The Counselling Process, 5th edition, Wasworth Brooks / Cole, Thomson Learning.
2. S. Narayana Rao (1981) Counselling Psychology, Tata McGraw Hill Publisher.
3. Brammer. L.M. and Shostrom E.L. (1977) Therapeutic Psychology, Englewood Cliffs, New Jersey.
4. Feltham. C & Horton. I (2000) Handbook of Counselling and Psychotherapy, London : Sage Publication.
5. Nelson - Jones, R. (1995). The Theory and Practice of Counselling, 2nd Edition, London : Cassell.
6. Covey, G. (2008). Theory and Practice of Counselling and Psychotherapy (8th ed.) Canada: Brookes/Cole.
7. Covey, G. (2008). Student manual for Theory and Practice of Counselling and Psychotherapy (8th ed.). CA: Brooks/Cole.
8. Burl E. Gilland & Richard K. James (1998). Theories and Strategies in Counselling and Psychotherapy. Singapore: Allyn and Bacon.
9. James O. Prochaska & John C. Norcross. (2007). Systems of Psychotherapy: A trans theoretical analysis (6th ed.). Thomson-Brooks/Cole.
10. Palmer, S. (ed.). (1999). Introduction to counselling and psychotherapy: The essential guide. New Delhi: Sage.
11. Simon, L. (2000). Psychotherapy: Theory, practice, modern and post modern influences. Westport, Connecticut: Praeger.
12. Sharf, R.S.(2000). Theories of psychotherapy and counselling: Concepts and cases (2nd ed.).Singapore: Brooks/Cole.

COURSE OUTCOMES

At the end of the course, the student will be able to:

1. Understand the factors contributing for positive outcomes in guidance and counselling
2. Access the purpose of testing and assessment understand the role of confidentiality and the limits to it in terms of the counselling and supervisory relationships.
3. In depth knowledge of ethical codes and variety of ethical dilemmas that could arise, and understand the ways in which to navigate and select the best course of action

MAPPING OF POs WITH COs

COURSE OUTCOMES	PROGRAM OUTCOMES									
	1	2	3	4	5	6	7	8	9	10
1		2	2	1		1	1	2	1	
2		2	1		2	1		2	1	1
3	2	1	2		2		1	1	1	

01- Low Level of Relevance, 02 - Moderate Level of Relevance, 03 - High Level of Relevance

‘

MAPPING OF PSOs WITH COs

CO1	Understand the basics of psychological principles; professional and ethical practice in the role of counsellor in various settings.
CO2	Develop knowledge on career assessments related to interests, personality, values, and career development.
CO3	Describe the role that human growth and development in counselling interventions and to appropriate modification made in a multicultural society.

PSO CO	PSO1	PSO2
CO1	1	
CO2	1	
CO3		1

PPS18CT403- INTERVENTION STRATEGIES AND SPORTS BEHAVIOUR

UNIT I: Intervention strategies: introduction, mental skills training in sports, Sports Psychology A clinician's perspective, action theory approach to applied sports psychology, eating disorders in sport: from theory to research to intervention, psychosocial antecedents of sport injury and intervention for risk reduction.

UNIT II : Intervention Strategies: Relaxation Procedures - Progressive Relaxation – Autogenic Training, Transcedental Meditation – Biofeedback, Cognitive Strategies: Imagery, Thought Stopping and Centering, Self – Talk, Psyching up strategies.

UNIT III : Overtraining: Performance focus, Psychological Well-being, Educating Coaches and Athletes about Overtraining, Physical Health, Increasing Coach-Athlete Communication, Developing Athlete Resources.

UNIT IV : Energy Management: Understanding Energy Management- Arousal affecting Performance, Effects of Under arousal and Over arousal in Performance, Developing Athlete Energy Management Skills – Phases in energy management - Education Phase, Acquisition Phase and Implementation Phase, athletes choking under pressure, preparatory routines in self paced events: Do they benefit the skilled athletes or the beginners helped.

UNIT V : Communication Process: Purposes, Types of Communication. Breakdown in Communication, Improving Communication, Confrontation.

REFERENCES:

1. Weinberg, R.S, Gould D (2003) – Foundations of Sport & Exercise Psychology, 3rd Edition, Human Kinetics, South Australia.
2. Gurbakhsh S.Sandhu (2002) - Psychology in Sports – A Contemporary Approach, Friends publications, New Delhi .
3. Murphy, S.M. (1995) Sport Psychology Interventions, Human Kinetics, Auckland.

COURSE OUTCOMES

At the end of the course, the student will be able to:

1. Demonstrate adequate knowledge and understanding to address psychological issues faced by athletes on and off the field, both in individual and team sports.
2. Analyse how psychological factors impact sports injuries, rehabilitation and recovery of athletes.
3. Outline the intervention methods that can help athletes improve their dynamics, boost their performance, recover from injuries, and overcome emotional obstacles caused by competition.

MAPPING OF POs WITH COs

COURSE OUTCOMES	PROGRAM OUTCOMES									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1		1	1	1	2		2	1		1
2		1	2	1	1	1	1		1	2
3	2	1	2	1	1		2	1	1	2

01- Low Level of Relevance, 02 - Moderate Level of Relevance, 03 - High Level of Relevance

MAPPING OF PSOs WITH COs

CO1	Demonstrate adequate knowledge and understanding to address psychological issue faced by athletes on and off the field, both in individual and team sports
CO2	Analyse how psychological factors impact sports injuries, rehabilitation and recovery of athletes.
CO3	Outline the intervention methods that can help athletes improve their dynamics, boost their performance, recover from injuries, and overcome emotional obstacles caused by competition.

PSO **CO**	**PSO1**	**PSO2**
CO1	**1**	
CO2	**1**	
CO3	**1**	

M.Sc. PSYCHOLOGY

PSP18CT401: COUNSELING AND BEHAVIOR MODIFICATION TECHNIQUES IN SPORTS

UNIT I Basic concepts – Meaning of Counseling –Goals of counselling – counselling process – characteristics of counselor – Group counselling – special areas of counselling - applied areas multicultural counselling – Ethical issues- Psychotherapy – Effectiveness Of Psychotherapy

UNIT II Approaches to counselling, person centered, Gestalt, Psychoanalytic, Cognitive, Trait factor, Behavioral and eclectic approach - Assessment Techniques - Important Factors – Tools of Assessment- Theories : Psychodynamic – Psychoanalytic and Adlerian Therapy Cognitive and Behavioural therapy: Behavioural Therapy – OCD, Cognitive: Beck's Cognitive Restructuring Therapy

UNIT III Basic concepts of Behaviour Modification: Behaviour Counselling: Salient Features Enhancement of Client's Involvement – Some Misconceptions about Behavioral Approach. Relaxation Techniques: Jacobson's Deep Muscle Relaxation Training, Autogenic Training, Yoga and Meditation. Application of Behavior Therapy: Anxiety Disorders, Psychoactive substance use disorders, Sexual Disorders

UNIT IV Assertion Training – Basic Dimensions – Training procedure – Components of Social Skill Training – Uses of social skill training – Precautionary points – systematic desensitization - . Operant Conditioning Techniques – Basic Paradigm – Schedules of Reinforcement – Aversive Conditioning and application – Token Economy – Shaping – Chaining – Other Operant Procedures, Premack's Principle and Prompting.

UNIT V Cognitive Behaviour Modification – Fundamental Aspects – Cognitive Restructuring – Meichenbaum's Self Instructional training – Beck's Model – Rational Emotive Therapy (Ellis) – Thought Stopping and Variations – Problem Solving Techniques.

REFERENCES:

1. Corey, G (2005), Theory and Practice of Counseling and Psychotherapy, 7th Edition, Scarborough, Brooks/Cole.
2. Martin, G & Pear J (2000) Behavior Modification (7edition), New Delhi, Prentice Hall of India Pvt. Ltd.
3. Wolpe, J (1982), Practice of Behavior Therapy (3rd edition), New York, Oxford Pergamon Press Inc.

4. Nelson-Jones, R. (1994). - The theory of practice of counseling psychology – Cassel London.
5. Rimm, D.C. and Masters, J.C. (1974), - Behaviour Therapy: Techniques and Empirical Findings. New York: John Wiley and Sons.
6. Robert C. Carson. James. N. Butcher and Susan Mincka (1996) - Abnormal Psychology and Modern Life, 10th Edition, New York; Harper Collins College Publishers.
7. Swaminathan V.D. and Kaliappan, K.V. (1997), Psychology for effective living – Behaviour modification, Guidance, Counselling and Yoga, Chennai. The madras Psychology society publication.

COURSE OUTCOMES

At the end of the course, the student will be able to:
1.Understand theories and practices related to human development across the lifespan, goals, principles and ethics involved in counselling
2.Assess and analyse behavioural issues with in day-to-day context and come up effective strategies to resolve conflicts.
3. Recommend techniques and training to enhance mental health, building, maintaining, and utilizing counselling relationships to address mental health issues and meet client goals.

MAPPING OF POs WITH COs

COURSE OUTCOMES	PROGRAM OUTCOMES									
	1	2	3	4	5	6	7	8	9	10
1		1	1	1			1	2		
2		1		2	1	1	1	1		
3	1					1	2	2		

01 - Low Level of Relevance, 02 - Moderate Level of Relevance, 03 - High Level of Relevance

MAPPING OF PSOs WITH COs

CO1	Understand theories and practices related to human development across the lifespan, goals, principles and ethics involved in counselling
CO2	Assess and analyse behavioural issues with in day-to-day context and come up effective strategies to resolve
CO3	Recommend techniques and training to enhance mental health , building, maintaining, and utilizing counselling relationships to address mental health issues and meet client goals.

PSO CO	PSO1	PSO2
CO1	1	
CO2	1	
CO3	1	

PPY18DSE07: COPING WITH STRESS

UNIT 1: Learning about sources of stress and its symptoms: Nature of stress- various sources of stress environmental, social, physiological and psychological; Symptoms of stress - emotional response, physiological & behavioural response.

UNIT 2: Coping --- (a) Concept of coping: Definition and Classification. (b) Measurement of coping behaviour.

UNIT 3: Life Style and Related aspects---- (a) Stress and Personality. (b) Life Style and Health : Cardiovascular disease, Atheroceterosis, cancer. (c) Stress and substance abuse: alcohol and other drugs

UNIT 4: Developing a sense of Humour – Learning to laugh – Using humour at work – Reducing conflicts with humour

UNIT 5: Learning to manage stress effectively: Methods - yoga, meditation, Vipassana, relaxation techniques, clarifying problem, alternate actions, support (Problem focused) emotion focused constructive approach

REFERENCE

1.Weiten, W. & Lloyd, M.A (2007). Psychology applied to Modern life. Thomson Detmar Learning .
2.Barrett.J.E. (1979) ---Stress and Mental Disorder, American Psychopathological Association Series,New York : Rayan Press, Section A-6.
3.Braumsteirn, J.J. and Toister, R.P (1981)----- Medical Applications of Behaviour Science chicago:Year Books Medical publishers Inc. Section A. I:
4.Dohrenwend B.S. and Dohrenwend, B.P. (1974) --- Stress life events : their nature and effect, Newyork, Johan willy and sons.
5.Goldberger, L. and Breznitz,S. (1982) ---- Handbook of stress : theoretical and clinical as pact
6.Harzars, R.S. and Talkman, S. (1984) ---- Stress, Appraisal and coping, Newyork: Springer.
7.Selye. H.(1980) ------Selyes guide to stress research vol. I, Newyork : Van Nostrand Reinhold.
ADACP -

COURSE OUTCOMES

At the end of the course, the student will be able to:
1. Acquire an in-depth knowledge of coping process and its effect on emotional mental and behavioural aspects of an individual.
2. Develop mechanisms to cope with stress and attempt to overcome or diminish the amount of stress experienced.

3. Using research in finding conventional methods to focus on the stressor itself, using evidence-based approaches to either removing or coming to terms with the stressful situation.

MAPPING OF POs WITH COs

COURSE OUTCOMES	PROGRAM OUTCOMES									
	1	2	3	4	5	6	7	8	9	10
1		1	2	1			1	1	1	
2		1	1	1			1	1	1	
3		1	2	1		1	1	2	1	

01 - Low Level of Relevance, 02 - Moderate Level of Relevance, 03 - High Level of Relevance

MAPPING OF PSOs WITH COs

CO1	Acquire an in-depth knowledge of coping process and its effect on emotional mental and behavioural aspects of an individual.
CO2	Develop mechanisms to cope with stress and attempt to overcome or diminish the amount of stress experienced
CO3	Using research in finding conventional methods to focus on the stressor itself, using evidence-based approaches to either removing or coming to terms with the stressful situation.

PSO CO	PSO1	PSO2
CO1	1	
CO2	1	
CO3	1	

M.Sc. SPORTS PSYCHOLOGY

PSP18CT303: PSYCHOLOGICAL PREPARATION AND MENTAL SKILLS TRAINING

UNIT I Mental Toughness – A social Cognitive Personality construct : Mental Toughness is multidimensional, aspects of MT are inherited, aspects of MT are learned- Pillars of Mental Toughness : Motivation, Self-Confidence, Coping with Pressures.

UNIT II: Stress in Sports – Anxiety Management Training – Applied Relaxation, Arousal Energising Techniques, Breath Control and Deep Breathing, Cognitive Affection, Stress Management Training, Cognitive Control, Hypnosis, Meditation, Performance and Competition Planning , Self -Compassion , Stress Inoculation Training.

UNIT III Relaxation: Physical Relaxation: Breathing Exercises, Progressive Muscle Relaxation, Biofeedback – Mental Relaxation Strategies: Transcendal Meditation, Mindfulness Meditation and Autogenic Training.

Unit IV: Energizing (Activation) Strategies: Arousal and Activation, Visualization and Self Talk strategies, Mental Imagery and Visualization – Arousal and Performance relationship.

UNIT V: Coping in Sports: Classifying coping in Sport; Problem and emotion focused coping, Avoidance Coping Task, Distraction and Disengagement oriented Coping – Coping Effectiveness and Coping Self Efficacy. Psychological Skills Training (PST) Definition, Importance of PST, Myths about PST,

REFERENCES:

Robert C. Eklundy and Gershan Tenenbaum(2014)-Enceclopedia of Sport and Exercise Psychology, Sage Publications

COURSE OUTCOMES

At the end of the course, the student will be able to:

1. Understand the basics and apply psychological techniques and strategies to enhance sports performance and participation in sport and exercise settings.
2. Analyze the influences of social aspects (e.g., group processes, persuasion) on performance and well-beings faced by sports persons.

3. Recommend strategies to cope with the mental stress and coping skills influence sports performance, with a commitment to social justice and intellectual diversity in the society and the influence on sports on public health

MAPPING OF POs WITH COs

COURSE OUTCOMES	PROGRAM OUTCOMES									
	1	2	3	4	5	6	7	8	9	10
1		2		1			1	2		
2		1		2	1	1	1	1		
3		2	2	1			2	1	1	1

01 - Low Level of Relevance, 02 - Moderate Level of Relevance, 03 - High Level of Relevance

MAPPING OF PSOs WITH COs

CO1	Understand the basics and apply psychological techniques and strategies to enhance sports performance and participation in sport and exercise settings.
CO2	Analyze the influences of social aspects (e.g., group processes, persuasion) on performance and well-beings faced by sports persons.
CO3	Recommend strategies to cope with the mental stress and coping skills influence sports performance, with a commitment to social justice and intellectual diversity in the society and the influence on sports on public healt

PSO CO	PSO1	PSO2
CO1	1	
CO2	1	
CO3		1

PSP18DSE05 - SPORTS FOR THE CHALLENGED

UNIT I Introduction – Sport in Society – Athletes with Disability - Historical context of Disability and Sports – Emergence and Development of Disability sports – Theories of Disability: Disability as a personal tragedy , Social model of Disability - Sports Current Challenges and Controversies in Disability Sports.

UNIT II Adapted Sports – Brief history of Adapted Physical Education – Beginning of Adapted Physical Education - Shift to sports and the whole person - Emerging comprehensive subdiscipline – Recent and current status – Role of Physical Educationist in Adapted Sport.

UNIT III Paralympics Games for people with Intellectual Disability – Coaching and training of athletes with disabilities – Disability Sports Movement - Special Olympics

UNIT IV Sports activities for individuals with individual needs – Deaflympics, Paraplegic, Cerebral Palsy, Blind, Amputee, Down Syndrome, Autism Spectrum Disorder, Specific Learning Disability , Mentally challenged .

UNIT V Inclusion and Integration – Equity Issues – Marketing Disability Sports – Future of Disability Sports.

REFERENCES:

1.John,P Winnick - Adapted Physical Education and Sport , Volume I , Human Kinetics, 2005
2. Nigel Thomas, Andy Smith – Disability, Sport and Society – An Introduction , Routledge,2008.
3. Steve Bailey - Athlete First – A history of the Paralympic Movement , John Wiley & Sons. C

COURSE OUTCOMES

At the end of the course, the student will be able to:

1. Understand limitations and exclusions were imposed on the individual due to impairment
2. Analyze and come up with ways to encourage and promote the participation of persons with disabilities in mainstream sporting activities at all levels
3. Provide opportunities to use sports as a medium to engage in levels of physical activity that will benefit their health and wellness among people with a disability

MAPPING OF POs WITH COs

COURSE OUTCOMES	PROGRAM OUTCOMES									
	1	2	3	4	5	6	7	8	9	10
1	1	1				1		1		
2				2		1	1	1	2	
3	1	1		2	1		1	1	2	2

01 - Low Level of Relevance, 02 - Moderate Level of Relevance, 03 - High Level of Relevance

MAPPING OF PSOs WITH COs

CO1	Understand limitations and exclusions were imposed on the individual due to impairment
CO2	Analyze and come up with ways to encourage and promote the participation of persons with disabilities in mainstream sporting activities at all levels
CO3	Provide opportunities to use sports as a medium to engage in levels of physical activity that will benefit their health and wellness among people with a disability.

PSO CO	PSO1	PSO2
CO1	1	
CO2	1	
CO3		1

PSP18CT403- ATHLETIC PSYCHOPATHOLOGY

UNIT I Definition of Psychopathology – Historical views of abnormal behavior – the stigma of abnormal behavior – Adaptive and maladaptive behavior - The concept of normality and abnormality - Theoretical Perspectives: Psychodynamic, Behavioral, Cognitive and Existential - Causal factors - types of treatment facilities – types of mental health specialists.

UNIT II Systems of classification of maladaptive behavior - DSM – V, ISD-10, similarities differences – advantages and disadvantages of classification – major diagnostic categories - Theories and Models of Anxiety Disorder: a) Panic, Phobic, OCD b) Somatoform Disorders, c) Dissociative Disorders , Schizophrenia and other psychotic disorders, Mood Disorders: Depressive-unipolar and bipolar disorders.

UNIT III The bio-psychosocial model – stress and illness – psycho-physiological disorders – classification of psychophysiological disorders: Theories: Personality disposition, rheumatoid arthritis, low back pain, Asthmatis, Allergy, Eczema, Itching, coronary heart disease – essential hypertension – headaches – migraine – tension headaches – peptic ulcers – colitisgenitor urinary disorders – Diabetes and menstrual disorders.

UNIT IV Mood Disorders Mania, Hypomania, Depressive episode, Recurrent depression, Bipolar affective disorders, Dysthymia, Cyclothymia - Anxiety, Somatoform and Dissociative Disorders Anxiety Disorders: Panic Disorder, Phobic disorders, Obsessive Compulsive Disorder, Post traumatic stress disorder, Generalised Anxiety disorder

UNIT -V Disorders of Personality: Adjustment disorder b) Impulse Control disorders c) Substance related disorders: Substance Abuse - Doping in Sports: History- stimulants, anabolic steroids – endurance and non-endurance sports: side effects in men and women- anti-doping organizations and legislation d) Eating disorders and Sleep disorders , Sexual and Gender Identity Disorders.

REFERENCES:

1. Carson, R. C., Butcher, J., & Susan, M.(1996). Abnormal Psychology and Modern Life (Tenth Edition). Harper Collins College Publishers.
2. Diagnostic and Statistical Manual of Mental Disorders, IV Edition American Psychiatric Association, Jaypee, 2005
3. Fish, F. & Hamilton, M.(Eds) .(1979). Fish's Clinical Psychopathology. Bristol: John Wright & Sons.
4. Kaplan, H. & Sadock, B. J.(1998). Synopsis of Psychiatry (9th Edition). New Delhi: B.I. Waverly
5. Millon, T., Blaney, H. P., & Davis, D. R.(1999). Oxford Textbook of Psychopathology. New York: Oxford University Press
6. Wenar, C. &Kerig, P. (2000). Developmental psychopathology. Singapore: McGraw
7. Debbie Stanley (2000) " Understanding Sports and Eating Disorders" : The Rosen Publishing Group . ISBN ``: 0823929930, 9780823929931
8. Rosen, Daniel. Dope: A History of Performance Enhancement in Sports from the Nineteenth Century to Today.

9. Wilson, Wayne (2000). Doping in Elite Sport: The Politics of Drugs in the Olympic Mvnt: The Politics of Drugs in the Olympic Movement. Human Kinetics

COURSE OUTCOMES

At the end of the course, the student will be able to:
1. Understand the basics of the biological, psychological, behavioral, cognitive, humanistic existential and sociocultural models of abnormal behavior and its influence on sports performance.
2. Analyse the different systems of classifications of maladaptive behaviour
3. Develop critical thinking and apply strategies on solving the emotional, behavioural and other psychopathological issues faced on and off the field of sporting arena and also their influence sports performance,

MAPPING OF POs WITH COs

COURSE OUTCOMES	PROGRAM OUTCOMES									
	1	2	3	4	5	6	7	8	9	10
1	2		1	1			1			
2			1	2	1	1		1		
3	1	2	2				2	2	2	2

01 - Low Level of Relevance, 02 - Moderate Level of Relevance, 03 - High Level of Relevance

MAPPING OF PSOs WITH COs

CO1	Understand the basics of the biological, psychological, behavioral, cognitive, humanistic-existential and sociocultural models of abnormal behavior and its influence on sports performance.
CO2	Analyse the different systems of classifications of maladaptive behaviour
CO3	Develop critical thinking and apply strategies on solving the emotional, behavioural and other psychopathological issues faced on and off the field of sporting arena and also their influence sports performance

PSO **CO**	**PSO1**	**PSO2**
CO1	**1**	
CO2	**1**	
CO3	**1**	

B.P.Ed

YOGA EDUCATION

UNIT I Yoga: Meaning and Definition. Origin and History – Yoga Sutra – Hatha yoga texts. Systems of Yoga: Karma yoga - Jnana yoga - Bhakthi yoga - Raja yoga. Eight limbs of yoga: Yama – Niyama – Asana – Pranayama – Pratyahara – Dharana – Dhyana – Samadhi. International Yoga Day – Yogic Diet.

UNIT II Schools of yoga - Effect of yoga on various systems of the body: Muscular system – Circulatory system – Endocrine system – Respiratory system – Nervous system – Digestive system – Yoga for Physical Fitness, Yoga for Health and Wellness. Yoga for Diseases.

UNIT III Loosening the joints - Suryanamaskar (Bihar school of yoga). Meaning of Asana – Classification – Guidelines for practicing asanas, Do's and Don'ts - differences between asanas and physical exercises - Techniques and benefits. Standing Asana: Vrkshasana – Trikonasana – Padhahastasana. Seated Asanas: Siddhasana – Padmasana – Paschimottanasana. Inverted asanas: Sarvangasana – Halasana. Prone position: Mayurasana – Sirsasanana. Back bend asanas: Bujangasana, Salabhasana, Dhanurasana, Ushtrasana. Supine position: Navasana, Suptavajrasana, Twisting: Vakrasana, Ardhamatsyendrasana, Kukutasana.

UNIT IV Pranayama: Definition, Types and Benefits: Nadi Shodhana, Surya Bhedana, Chandra bhedana, Kapalabhati, Bhastrika, Sitakari, Sitali, Bhramari – Ujjai. Nadi: Ida, Pingala, Sushumna.

UNIT V Techniques and Benefits of Shat kriyas: Neti (Jala, Sutra) Dhauti (Vamana, vastra) Bhasti, Nauli, Trataka, Kapalabhati, Yoga Nidra. Meditation: Meaning and benefits. Bandhas and Mudras : Meaning and benefits.

Reference

1. George Feuerstein. (1975).Text Book of Yoga. London: Motilal Bansaridass Publishers (P) Ltd.
2. Gore. (1990). Anatomy and Physiology of Yogac Practices. Lonavala: Kanchan Prkashan.
3. Iyengar, B. K. S. (2000). Light on Yoga. New Delhi: Harper Collins Publishers.
4. Moorthy .A.M & Alagesan. S. (2004).Yoga Therapy. Coimbatore:

Teachers Publication House.
5. Swami Satyananda Saraswathi. (1984). Kundalini and Tantra. Bihar: Yoga Publications Trust.
6. Swami Kuvalayananda. (1998). Asanas. Lonavla: Kaivalyadhama. Publication.

COURSE OUTCOME

At the end of the course, the student will be able to:

CO-1 Understand the basic Concepts of Yoga

CO-2 Apply the principles of Yoga to live healthy and active life style.

CO-3 Promote the awareness of health through yoga

CO-4 Analyze the techniques and of body posture to bring out healthy change.

CO-5 Able to execute loosening exercise , Asanas, Pranayama and Shatkriyas.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	3	1	3	1		1	2	3	2	1
2	1		2	3			1	3	2	
3	1		1	2	1	2		2		2

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	2	3
2		
3	1	2

SPORTS TRAINING

UNIT I

Sports Training: Meaning, Definition, Characteristics and Principles – Training Load: External and Internal Load - Principles of Training Load – Overload: Symptoms and Tackling – Periodization : Types, Aims and Content of Various Periods – Preparatory, Competition and Transition – Plan : Short term and Long **term**

UNIT II

Warming Up: Definition – Types – Importance of Warming Up – Types of Sports Training and their Purpose: Weight Training (Free Weight and Machine Weights) – Circuit Training – Interval Training – Plyometric Training - Fartlek Training – Swiss Ball Training – Medicine Ball Training – Cross Training**.**

UNIT III

Strength - Definition of strength - Types of Strength: Maximum strength, explosive strength, strength endurance, general strength, specific strength, relative strength. Importance of strength- Factors determining strength- Training method for strength improvement - Loading procedure for strength training.

UNIT IV

Speed - Definition of speed - Forms of speed, reaction speed, movement speed, acceleration ability, loco-motor ability. Speed endurance - Factors determining speed performance - Training methods for increasing speed.

UNIT V

Endurance: Definition – Types – Importance – Training Methods for improving Endurance – Coordinative Abilities: Definition – Types and Training Methods for Improving Coordinative Abilities – Flexibility : Definition – Types - Methods for Improving Flexibility

Reference

1.Arnheim D., & William E Prentice. (1978). Athletic Training. St. Louis: Mosby Year Book.

2. Authors Guide (2014) IAAF Competition Rules 2014-2015, Monaco Cedex: IAAF Publishing .

3. Authors Guide (2002) Rules of Games and Sports, New Delhi : YMCA Publishing House

4. Authors Guide (2000) FIBA Official Basket Rules : Munich.

5. Bonder, J.B (1984). How to be a Successful Coach. New York: Prentice Hall, Inc.

6. Breshahan, Tuttle., & Cretzmeyer. (1997). Track and Field Athletics. New

Jersey: Prentice Hall, Inc
7. Hardayal Singh. (2005). Sports Training - General Theory and Methods. Patiala: NSNIS.

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Understand training as performance based science
CO-2 Explain different means and methods of various training
CO-3 Prepare training schedule for various sports and games
CO-4 Appraise types of periodization for performance development
CO-5 Create various training facilities and plans for novice to advance performers

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	1	2	3				1	2	1	3
2		3	2	1	1	1				
3	1	3	3	2			2		1	3

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	2	3
2		
3	1	2

RESEARCH AND STATISTICS IN PHYSICAL EDUCATION

UNIT I Meaning and Definition of Research - Need, Nature and Scope of research in Physical Education. Classification of Research: Basic Research, Applied Research, Action Research. Location of Research Problem - Criteria for selection of a problem. Qualities of a good researcher.

UNIT II Meaning and Definition of Hypothesis. Formulation of Hypothesis. Experimental Methods of Research: Meaning of variable - Types of Variables - Meaning and Nature of experimental Research. Types of Experimental Design: Single Group Design, Reverse Group Design, Repeated Measure Design, Static Group Comparison Design, Equated Group Design, Factorial Design.

UNIT III Report Writing: Front Materials, Body of Thesis – Back Materials. Method of Writing Research Proposal, Thesis / Dissertation: Method of Writing Abstract, Mechanics of Writing Research Report, Bibliography Writing.

UNIT IV Meaning and Definition of Statistics. Need and importance of Statistics. Types of Statistics. Meaning, uses and construction of frequency table. Meaning, Purpose, Calculation and advantages of Measures of central tendency -Mean, Median and Mode.

UNIT V Meaning, Purpose, Calculation and advantages of Range, Quartile Deviation, Mean Deviation, Standard Deviation., Probable Error. Meaning, Purpose, Calculation and advantages of Scoring scales: Sigma scale, Z Scale, Hull scale. Graphical Representation in Statistics: Line Diagram, Pie diagram, Bar diagram, Histogram, Frequency Polygon, Ogive Curve.

Reference

1. Best, J.W. (1971) Research in Education, Englewood Cliffs,: Prentice Hall.
2. Clark, D.H. (1999) Research Problem in Physical Education 2nd edition, Eaglewood Cliffs:Prentice Hall, Inc.
3. Clarke David.H & Clarke H, Harrison (1984) Research processes in physical Education.
4. Craig Williams and Chris Wragg (2006) Data Analysis and Research for Sport and exercise science London : Routledge Press.
5. Jerry R Thomas & Jack K Nelson(2000) Research Methods in Physical Activities, Illinois Human Kinetics
6. Kamlesh, M.L. (1999) Research Methodology in Physical Education and Sports.
7. New Moses, A.K..(1995) Thesis Writing Format. Chennai : Poompugar Pathippagam. Publications.
8. Rothstain, A.(1985) Research Design and Statistics for Physical

Education, Englewood Cliffs: Prentice Hall, Inc.

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Identify the research problem in the field of physical Education and sports
CO-2 Know to Summarize the various research literature
CO-3 Understand and apply the basics of statistics in research.
CO-4 Organize the samples and sampling techniques which is relevant to the study
CO-5 Appraise the effects during the training and practical sessions

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	1		2	1			2	3		
2	2		2		1	2		3		2
3	1	2			1				2	

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	2	1
2	1	3
3		

SPORTS NUTRITION AND WEIGHT MANAGEMENT

UNIT I Introduction to Sports Nutrition – Nutrition, Sports Nutrition : Meaning and Definition – Basic Nutritional Guidelines – Role of Nutrition in Sports – Factors to be considered for developing Nutritional Plan.

UNIT II Nutrients: Ingestion to Energy Metabolism: Carbohydrates, Protein, Fat – Meaning, Classification and its Functions. Role of Carbohydrates, Fat and Protein during Exercise. Vitamins, Minerals, Water : Meaning, Classification and its Function. Role of Hydration during Exercise, Water Balance.

UNIT III Weight Management: Meaning, Concept of Weight Management in the Modern Era – Factors affecting Weight Management and Values of Weight Management - Maintaining a Healthy Life Style - Body Mass Index (BMI)

UNIT IV Planning of Weight Management: Determination of Desirable Body Weight – Daily Caloric Intake and Expenditure – Balanced Diet for Indian School Children – Weight Management Programme for Sporty Children – Role of Diet and Exercise in Weight Management – Diet Plan and Exercise Schedule for Weight Gain and Loss.

UNIT V Obesity: Meaning – Definition – Types – Causes and Solution for overcoming Obesity. Myths of Spot Reduction and Weight Loss – Dieting and Exercise for Weight Control

Reference

1.Bessesen, D. H. (2008). Update on obesity. J ClinEndocrinolMetab.93(6), 2027-2034.
2. Butryn, M.L., Phelan, S., &Hill, J. O.(2007). Consistent self-monitoring of weight: a key component of successful weight loss maintenance.Obesity(Silver Spring). 15(12), 3091- 3096.
3. Chu, S.Y. & Kim, L. J. (2007). Maternal obesity and risk of stillbirth: a metaanalysis Am J ObstetGynecol, 197(3), 223-228.
4. DeMaria, E. J. (2007). Bariatric surgery for morbid obesity. N Engl J Med,356(21), 2176-2183.

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Restate the role of nutrients and caloric requirements
CO-2 Sketch the basic classification, functions and utilization of nutrients.
CO-3 Point out diet for various competitions and nutrient supplements for performance.
CO-4 Evaluate the factors affects weight management and solutions for obesity and Design caloric requirements for various sports and age groups.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	2	1	3			2		3	1	1
2	2			1				3	2	1
3		1	1		2			3		

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	1	3
2	3	2
3		

THEORIES OF SPORTS AND GAMES, COACHING AND OFFICIATING

UNIT I History of Athletics: World and India. Marking and Measurements of Non Standard Track (200m). Marking and Measurements of Field Events

UNIT II Marking and Measurements of Standard Track (400m), Cross Country, Road Running, Ultra Running and Mountain Running

UNIT III Rules and Interpretation of Track and Field Events – Duties of Officials in Track and Field Events. Methods of arranging Seeding and Heats in Track and Field Events – Score Sheets for Track and Field Events, Combined Events (Triathlon – Pentathlon – Heptathlon - Decathlon)

UNIT IV World and Indian History, Rules and Interpretation, Marking and Measurements of Play Fields and Standard Equipments for the following games: Basketball, Football, Handball, Volleyball , Cricket and Hockey

UNIT V Coaching: Meaning and Definition. Teaching, Training and Coaching – Philosophy of Coaching – Qualification and Qualities of a Coach

Reference

1.Arnheim, D., & William, E Prentice. (1991). Principles of athletic training. St. Louis: Mosby Year Book.
2. Arnheim D., & William E Prentice. (1978). Athletic Training. St. Louis: Mosby Year Book.
3. Authors Guide (2018) IAAF Competition Rules 2018-2019, Monaco Cedex: IAAF Publishing .
4. Authors Guide (2002) Rules of Games and Sports, New Delhi : YMCA Publishing House.
5. George Immanuel.(1997).Track and Field Event layout and Marking. Chennai:
6. Hardayal Singh. (2005). Sports Training - General Theory and Methods. Patiala: NSNIS.
7. Josse, P, Moprtensen., & John, M,Copper. (1998). Track and Field for Coach and Athlete. St.Louis: C.V.Mosphy Company.

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Able to mark Track and Field and Officiate
CO-2 Able to understand the rules of the games and sports
CO-3 Able to give seeding and Heats in Track and Field. Combined Events .
CO-4 Design and practice the new methods of technique of officiating

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	2		1	3						
2				1			3		1	2
3	1		2		1			3		

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	1	3
2	2	3
3		

CONTEMPORARY ISSUES IN PHYSICAL EDUCATION, FITNESS AND WELLNESS

UNIT I Concept of Physical Education and Fitness : Definition, Aims and Objectives of Physical Education, fitness and Wellness. Importance and Scope of fitness and wellness. . Modern concept of Physical fitness and Wellness. Physical Education and its Relevance in Inter Disciplinary Context.

UNIT II Fitness, Wellness and Lifestyle ; Fitness – Types of Fitness and Components of Fitness. Understanding of Wellness. Modern Lifestyle and Hypo kinetic Diseases – Prevention and Management. Physical Activity and Health Benefits

UNIT III Principles of Exercise Programme: Means of Fitness development – aerobic and anaerobic exercises. Exercises and Heart rate Zones for various aerobic exercise intensities. Concept of free weight Vs Machine, Sets and Repetition . Concept of designing different fitness training programme for different age group.

UNIT IV Safety Education and Fitness Promotion: Health and Safety in Daily Life. First Aid and Emergency Care. Common Injuries and their Management. Modern Life Style and Hypo-kinetic Disease –Prevention and Management

UNIT V Sports Nutrition: Diet for sports competition- supplementation to the daily diet. Vitamins, Minerals, Fluids. Electrolyte replacement, Carbohydrate loading, Protein loading, Calcium and iron supplement. Pre-event meal. Time for pre-event meal, Alternate eating pattern, Foods to avoid. Exercise and weight control, Crash dieting, Weight Control.

Reference

1. Difiore, J.(1998). Complete guide to postnatal fitness. London: A & C Black,.
2. Giam, C.K & The, K.C. (1994). Sport medicine exercise and fitness.

Singapore: P.G. Medical Book.

3. Mcglynn, G., (1993). Dynamics of fitness. Madison: W.C.B Brown.
4. Sharkey, B. J.(1990). Physiology of fitness, Human Kinetics Book.
5. William, D. Mc Aradle. (1996). Exercise Physiology, Energy, Nutrition and Human Performance. Philadelphia: Lippincott Williams Company.

COURSE OUTCOME

At the end of the course, the student will be able to:
Difiore, J.(1998). Complete guide to postnatal fitness. London: A & C Black,.
2. Giam, C.K & The, K.C. (1994). Sport medicine exercise and fitness. Singapore: P.G. Medical Book.
3. Mcglynn, G., (1993). Dynamics of fitness. Madison: W.C.B Brown.
4. Sharkey, B. J.(1990). Physiology of fitness, Human Kinetics Book.
5. William, D. Mc Aradle. (1996). Exercise Physiology, Energy, Nutrition and Human Performance. Philadelphia: Lippincott Williams Company.

COURSE OUTCOME

CO-1 Discuss research from a multidisciplinary perspective relative to current issues in physical activity and health.
CO-2 Apply qualitative research methods to explore and critically examine a variety of curricular topics.
CO-3 Demonstrate application of relevant research and theory to a contemporary issue in physical activity and exercise science.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	3		2		1			2		2
2	1		2	1			2		3	1
3		2		1		1		1		3

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	1	3
2	3	2
3		

M.P.Ed

RESEARCH PROCESS IN PHYSICAL EDUCATION AND SPORTS SCIENCES

UNIT I: Meaning and Definition of Research - Need, Nature and Scope of research in Physical Education. Classification of Research: Basic Research, Applied Research, Action Research. Location of Research Problem - Criteria for selection of a problem. Qualities of a good researcher.

UNIT II: Meaning and Definition of Historical Research - Steps in Historical Research - Sources of Historical Research. Primary Data - Secondary Data - Historical Criticism: Internal Criticism, External Criticism. Descriptive Methods of Research: Survey Study - Case study - Normative Study.

UNIT III: Meaning and Definition of Hypothesis. Formulation, types and testing of Hypothesis. Experimental Methods of Research: Meaning of variable - Types of Variables - Nature and meaning of experimental Research. Types of Experimental Design: Single Group Design, Reverse Group Design, Repeated Measure Design, Static Group Comparison Design, Equated Group Design, Factorial Design.

UNIT IV:Meaning and Definition of Sample and Population. Sampling – Process and techniques. Types of Sampling: Probability Methods : Systematic Sampling,Cluster sampling, Stratified Sampling. Area Sampling- Multistage Sampling. Non – Probability Methods: Convenience Sample, Judgment Sampling, Quota Sampling.

UNIT V: Chapterization of Thesis/ Dissertation: Front Materials, Body of the 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 – Method of writing bibliography for books, journals, unpublished thesis and web resources.

REFERENCE

1.Best J. W (1971) Research in Education, New Jersey: Prentice Hall, Inc.
2.Clarke David.H& Clarke H, Harrison (1984) Research processes in Physical Education.
3.New Jersey : Prentice Hall Inc.Craig gbrmju6ki6jut ju.
4.Jerry R Thomas & Jack K Nelson(2000) Research Methods in Physical Activities. Illnosis : HumanKinetics;
5.Kamlesh, M.L. (1999) Research Methodology in Physical Education and Sports. New Delhi.
6.Moses, A.K..(1995) Thesis Writing Format. Chennai :PoompugarPathippagam.
7.Rothstain, A. (1985) Research Design and Statistics for Physical Education, Englewood Cliffs : Prentice Hall, Inc.
8.Subramanian.R, Thirumalai Kumar S &Arumugam.C(2010) Research Methods in Health, Physical Education and Sports. New Delhi: Friends Publication.

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Know the origin and development of Physical Education
CO-2 Apply the knowledge of Olympism in organizing various sport activities
CO-3 Distinguish the functional operations on National and International Olympic Federations.
CO-4 Analyze the concepts and issues pertaining to Physical Education.
CO-5 Formulate the principles, philosophy and concepts about Physical Education

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	2		2	1	1		2	3		
2	2			3		2	1		1	
3	3		1		2		1		2	

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	1	2
2		
3	2	3

YOGIC SCIENCES

UNIT I: Principles, Philosophy and scope of Yoga. Yogic practices for various age groups. Yoga – Values – Spirituality, Yogic practices for personality development. Loosening exercises: Techniques and benefits. Suryanamaskar: Vivekananda kendra Method and benefits . Asanas : Types – Advanced asanas and Benefits. Pranayama: Aspects of Pranayama - Methods and benefits. Nadis and Chakras: Major Chakaras - Benefits of clearing and balancing Chakras.

UNIT II: Shat Kriyas- Meaning, Techniques and Benefits of Neti-Dhauti- Kapalapathi-Tratak - Nauli – Basti. Bandhas:Meaning, Techniques and Benefits of JalendraBandha, JihvaBandha, UddiyanaBandha, MulaBandha.

UNIT III: Mudras : Meaning, Techniques and Benefits of Hasta Mudras, Asamyuktahastam, Samyuktahastam, Mana Mudras, Kaya Mudras, Banda Mudras , Adhara Mudras . Meditation : Guidelines, Types:- Passive and active. Saguna Meditation and Nirguna Meditation, Techniques, Benefits.

UNIT IV: Yoga and Sports: Yoga Supplemental Exercises -Yoga Compensation Exercises-Yoga Regeneration Exercises- Power Yoga. Role of Yoga in Psychological Preparation of athlete: Mental Wellbeing, Anxiety, Stress, Depression, Concentration, Self Actualization**.**

UNIT V: Yoga for skill development, Yoga for performance enhancement of sports persons, Yoga management for sports injuries, Yoga for Leadership, Yogic Diet for Fitness and Hygiene.

REFERENCE

1.Authors Guide (2015) , International Day of Yoga, Common Yoga Protocol, New Delhi: Ministry of AYUSH, Government of India.
2.George Feuerstein. (1975).Text Book of Yoga. London: MotilalBansaridass Publishers (P)Ltd.,

3.Gore. (1990). Anatomy and Physiology of Yogic Practices. Lonavala: KanchanPrkashan.
4.Helen Purperhart (2004) The Yoga Adventure for Children . Netherlands:A Hunter House Book.
5.Iyengar, B. K. S. (2000). Light on Yoga. New Delhi: Harper Collins Publishers.
Background, Varanasi: BharataManishai.
6.Kuvalyananda Swami & S.L. Vinekar. (1963). Yogic Therapy – Basic Principles and Methods.
7.New Delhi: Govt of India, Central Health Education and Bureau.
8.Kenghe. C.T. (1976). Yoga as Depth-Psychology and para-Psychology (Vol-I): Historical
Moorthy .A.M &Alagesan. S. (2004).Yoga Therapy. Coimbatore: Teachers Publication House.
9.Swami SatyanandaSaraswathi. (1984). Kundalini and Tantra. Bihar: Yoga Publications Trust.
10.Swami Kuvalayananda. (1998). Asanas. Lonavla: Kaivalyadhama.
11.Swami SatyanandaSarasvati. (1989). Asana Pranayama Mudra Bandha. Munger: Bihar School of Yoga,
12.Swami Sivananda. (1971). The Science of Pranayama. Chennai: A Divine Life Society Publication,Tiwari. O .P. (1998). Asanas-Why and How. Lonavla: Kaivalyadhama.
13.ThirumalaiKumar. S and Indira .S(2011) Yoga in Your Life, Chennai: The Parkar Publication.

COURSE OUTCOME

At the end of the course,students are able to:

CO-1 Understand the basic principles of Anatomy, Physiology and Health Education
CO-2 Apply the knowledge in the field of physical education and movement activity.
CO-3 Analyze the practical knowledge during the practical situation.
CO-4 Remember and recall the definition of anatomy and physiology and co-relate the principles of physiology.
CO-5 Appraise the effects of health condition during the training and practicalsessions

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	2		1	1				3	2	1
2	1						2	3		
3	2		3					1	2	

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1		
2	2	3
3	1	1

SPORTS TECHNOLOGY

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, nanomoulding 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 modeling foam.

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

UNIT IV: Modern equipments: 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 withnano 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.

REFERENCE

1.Charles J.A. Crane, F.A.A. and Furness , J.A.G. (1987) " Selection of Engineering Materials" UK: Butterworth Heiremann.
2.Finn, R.A. and Trojan P.K.(1999) " Engineering Materials and their Applications" UK: Jaico Publisher .
3.John Mongillo,(2001), "Nano Technology 101 " New York : Green wood publishing group.

COURSE OUTCOME

At the end of the course, the student will be able to:

CO-1 Understand the Educational and cultural values of Olympic movement.
CO-2 Analyze the Modern Olympic Games and Rules of Eligibility for Competition.
CO-3 Know about The organizational structure and functions of Para Olympic Games
CO-4 Analyze the Achievement of India in Team Games and Individual Sports.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	2		1					3		
2	1	2		2					3	
3	1	1	2	1		1		3		1

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	2	3
2	1	3
3	1	2

APPLIED STATISTICS IN PHYSICAL EDUCATION AND SPORTS

UNIT I: Meaning and Definition of Statistics. Function, need and importance of Statistics. Types of Statistics. Meaning of the terms: Population, Sample, Data, Kinds of data. Variables: Discrete and Continuous. Parametric and non parametric statistics.

UNIT II: Meaning, uses and construction of frequency table. Meaning, Purpose, calculation and advantages of Measures of central tendency -Mean, median and mode**.**

UNIT III: Meaning, Purpose, Calculation and advantages of measures of variability: Range, Quartile Deviation, Mean Deviation, Standard Deviation and Probable Error. Meaning, Purpose, and Calculation of Scoring scales: Sigma scale, Z Scale, Hull scale, T Scale.

UNIT IV: 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, Pie diagram, Bar diagram, Histogram, Frequency Polygon, Ogive Curve.

UNIT V: 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 ANCO**VA.**

REFERENCE

1.Best, J.W. (1971) Research in Education, Englewood Cliffs,: Prentice Hall.
2. Clark, D.H. (1999) Research Problem in Physical Education 2nd edition, Eaglewood Cliffs:Prentice Hall, Inc.
3. Jerry R Thomas & Jack K Nelson(2000) Research Methods in Physical Activities, Illinois : Human Kinetics.
4. Kamlesh, M.L.(1995) Research Methodology in Physical Education and Sports. New Delhi.
5.Rothstain, A.(1985) Research Design and Statistics for Physical Education, Englewood Cliffs: Prentice Hall, Inc.
6.Sivaramakrishnan. S. (2006) Statistics for Physical Education, Delhi: Friends Publications.
Thirumalaisamy .R(1998), Statistics in Physical Education. Karaikudi: Senthilkumar Publishers.

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Understand training as performance based science.

CO-2 Explain different means and methods of various training.
CO-3 Prepare training schedule for various sports and games.
CO-4 Appraise types of periodization for performance development.
CO-5 Create various training facilities and plans for novice to advance performers.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	1	2	3				1	2	1	3
2		3	2	1	1	1				
3	1	3	3	2			2		1	3

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	1	2
2	2	
3	2	3

HEALTH EDUCATION AND SPORTS NUTRITION

UNIT I: Health Education: Concept, Dimensions, Spectrum and Determinants of Health Definition of Health, Health Education, Health Instruction, Health Supervision Aim and objective of Physical Education, Health Education and Recreation. Guiding Principles of Health and 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 school Health Services - Care of Skin, Nails, Eye Health Service, Nutritional Service, Health Appraisal, Health Record, Healthful School Environment, first- aid and emergency care. Signs, Symptoms and prevention of communicable Diseases: Malaria, Small Pox, Dysentery, Mumps, Typhoid and AIDS.

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. Balanced Diet

UNIT IV: Introduction to Sports Nutrition: Meaning and Definition of Sports Nutrition, Role of nutrition in sports, Basic Nutrition guidelines. Misuse of Drugs in Sports. Nutrients: Ingestion to energy metabolism: Carbohydrate, Protein and Fat, Role of carbohydrates, Fat and protein during exercise. Nutrition and Dietary Manipulations. Chief Minister's Mid day meals Scheme.

UNIT V: Nutrition and Weight Management :Concept of Body mass index (BMI), 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.

COURSE OUTCOME

At the end of the course, students are able to
CO-1 Understand the primary responsibilities the sports trainer has in preventing sports injuries and providing initial care for injured athletes.
CO-2 Demonstrate the basics of sport first aid during and after game situation.
CO-3 Recognise and appropriately treat common sports injuries and conditions from onset through rehabilitation.
CO-4 Identify and apply knowledge of anatomy to the design and execution of research studies.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	3		1				1	3	2	
2	2	1		2			3	1		
3		2	3			1			2	3

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	3	2
2	1	
3		3

SPORTS ENGINEERING

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. Sports Dynamics: Introduction to Dynamics, Kinematics to particles – rectilinear and plane curvilinear motion coordinate system. Kinetics of particles.

UNIT III: 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.

UNIT IV: Requirements: Air ventilation, Day light, Lighting arrangement, Galleries, Store rooms, Office, 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.

UNIT V: Building process:- design phase (including brief documentation), construction phase functional (occupational) life, Re-evaluation, refurnish, demolish. Maintenance policy, preventive maintenance, corrective maintenance. Facility life cycle costing: Basics of theoretical analysis of cost, total life cost concepts, maintenance costs, energy cost, capital cost and taxation.

REFERENCE

1.Franz K. F. (2013) Editor, Routledge Handbook of Sports Technology and Engineering :Routledge.
2.Steve Hake, Editor, The Engineering of Sport (CRC Press, 1996) Franz K.
3.F(2007) Editor The Impact of Technology on Sports II, CRC.
4.Helge N (2009) Sports Aerodynamics (Springer Science & Business Media.
5.Youlin Hong, (2013) Editor Routledge Handbook of Ergonomics in Sport and Exercise: Routledge.
6.Jenkins M.,(2003) Editor Materials in Sports Equipment, Volume I :Elsevier.
7.Colin White, Projectile Dynamics in Sport: Principles and Applications Eric C.

8.(2010) Editor Sports Facility Operations Management :Routledge.

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Perform and report on the exploratory analysis of data collected using sports technology.
CO-2 Analyze sporting data of various types via astute use of statistical packages.
CO-3 Practice mathematics, statistics, information technology in sport technology related problems.
CO-4 Support a conclusion based upon quantitative prediction, performance and analysis of a sporting team, code, or gaming environment.
CO-5 Offer Hands on Knowledge in sports Technology.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	2	1						3	1	3
2		2	3		1				1	3
3			1			2	3			2

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	3	2
2	1	3
3	2	1

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN PHYSICAL EDUCTION

UNIT I Communication and Classroom Interaction: Concept, Elements, Process and Types of Communication, Communication Barriers and Facilitators of communication, Communicative skills of English - Listening, Speaking, Reading and Writing, Concept and Importance of ICT Need of ICT in Education and Physical 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 and Applications of Computers Hardware of Computer: Input, Output & Storage Devices .MS Office Applications: MS Word: Main Features & its Uses in Physical Education. MS Excel: Main Features &its Applications in Physical Education. MS Power Point: Preparation of Slides with Multimedia Effects. MS Publisher: Newsletter & Brochure

UNIT III: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. E-Learning & Web Based Learning. E-Learning. Web Based Learning. Visual Classroom.

UNIT IV: Using Computers in Physical Education: Research, Biomechanics, Exercise Physiology, Motor Learning, Sports Psychology. – Analyzing the data using statistics in Spread Sheet: Concept and Calculation of Mean, Standard Deviation, "t" test, Correlation.

UNIT V:SPSS Package:Introduction, Feeding Data, Naming the variables, Grouping the Data. Computation of Descriptive Statistics, Correlated and Uncorrelated "t" ratio, Analysis of Variance, Co-efficient of Correlation**.**

REFERENCE

1.Ram B(2006), New Age International Publication, Computer Fundamental, Third Edition.
2.Brain under IDG Book. India (p) Ltd Teach Yourself Office 2000, Fourth Edition-2001
3.Douglas E. Comer (2005), The Internet Book, Purdue University, West Lafayette.
Heidi Steel Low price Edition, Microsoft Office Word 2003- 2004.
4.Research and Development Wing (2006) ITL Education Solution Ltd. Introduction to information Technology,
5.Pradeep K. Sinha &Priti; (2006) Sinha, Foundations computing BPB Publications .
6.Rebecca (1999)Bridges Altman Peach pit Press, Power point for window.
Sanjay Saxena, (2006) Vikas Publication House, Pvt. Ltd. Microsoft Office for everone, Second Edition.

COURSE OUTCOME

At the end of the course, students are able to
CO-1 Know the fundamental of all the games and sports
CO-2 Understand the rules of all the games and sports
CO-3 Preparing the students for the competition
CO-4 Classify the students accordingly for various games and sports
CO-5 Design and practice the new methods of technique and training.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	1		3		1			2	1	2
2		2	1					1		3
3	1	3	1		1	1	2			2

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	1	3
2		
3	2	1

EDUCATIONAL TECHNOLOGY IN PHYSICAL EDUCATION

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. Use of Television and CCTV in instruction and Training, Video Conferencing, SITE experiment, Use of animation films in Teaching Physical Activities.

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. Procedure and organization of Teleconferencing/ Interactive video-experiences of institutions, schools and universities. Computer Assisted Instruction/ Teaching in Physical Education and Sports.

REFERENCE

1. Bhatia and Bhatia (1959). The Principles and Methods of Teaching (New Delhi : Doaba House.
2. Dasgupta D.N, Communication and Education, Pointer Publishers Education and Communication for development, O. P. Dahama, O. P. Bhatnagar, Oxford (Page 68 of 71) IBH Publishing company, New Delhi
3. Sampath K, Pannirselvam A and S. Santhanam (1981) Introduction to Educational Technology New Delhi: Sterling Publishers Pvt. Ltd..
4. S.K. (1982)Methods and Techniques of Teaching (New Delhi, Jalandhar, Sterling Publishers Pvt. Ltd.

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Plan, develop, communicate, implement, and evaluate technology-infused strategic plans.
CO-2 Maintain and manage a variety of digital tools and resources for use in technology-rich learning environment

CO-3 Design, develop, and implement technology-rich sports program that model of sports field and promote digital age best practices playing and assessment.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	2		1					3		
2	1	2		2					3	
3	1	1	2	1		1		3		1

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	2	3
2	1	2

M.PHIL

MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION

UNIT I Meaning and Definition of Test, Measurement and Evaluation. Need and Importance of Test and Measurement in Physical Education

UNIT II Criteria and Administration Of test: Criteria of Test: Scientific Authenticity – Reliability, Objectivity, Validity, Availability of Norms, Administrative Feasibility and Education Application. Administration of Test :Duties of Advance Preparation – Duties during testing – Duties after testing

UNIT III Physical Fitness Test : AAPHERD Health Related Fitness Battery (Revised in 1984) – Roger's Physical Fitness Index. Cardio Vascular Test: Harvard Step Test, 12 Minutes Run /Walk Test, Multi Stage Fitness Test (Beep Test). Motor Fitness: Indiana Motor Fitness Test (for elementary and high school boys, girls and college men), JCR Test. SDAT World Beaters Battery Test for High School Boys and Girls.

UNIT IV

Sports Skill Test: Badminton: Miller Wall Volley Test – French Short Service Test, Basketball: Johnson Basketball Test – Leilich Basketball Test, Hockey: Firedal Field Hockey Test, Schimithal French Field Hockey Test.

UNIT V

Sports Skill Test: Football: Johnson Soccer Test – McDonald Soccer Test. Tennis: Dyer Tennis Test, Volleyball: Brady Volleyball Test – Rusel Lange Volleyball Test

Reference

1. Barrow, H.M.. and McGee, R.,A (1964.) Practical Approach to Measurement in Physical Education, Lea and Febiger, Philadelphia.
2. Bovard, J.F., Cozens, F., W. and Hagman, P.E.(1949)Test and Measurements in Physical Education, W.B. Sunders Company, Philadelphia.
3. Hunsicker, P.A. and Montoye, H.J. (1953) Applied Test and Measurements in Physical Education, Prentice Hall Inc., New York.
4. Leger (1983), Testing Physical Fitness, Eurofit Experimental Battery Provisional Handbook, Strasbourg: UK
5. Meyers, C.R. and Belsh, E.T. (1962) Measurement in physical Education, The Ronald press Company. New York. sports, New Delhi: Friends Publications.
6. Wilgoose, C.E (1967) Evaluation in Health Education and physical Education, McGraw Hill Book Company, Inc, New York.
7. Yobu,A (2010), Test, Measurement and Evaluation in Physical Education Friends Publication, New Delhi

COURSE OUTCOME

At the end of the course, the student will be able to:

CO-1 Understand the basics of Test, Measurement and Evaluation in physical education, Health and Fitness.

CO-2 Know about the different types of test for different sports and games.

CO-3 Apply the tests in minor research areas

CO-4 Analyze the performance and movements in the field of sports.

CO-5 Evaluate the battery test and others tests prescribed by the government efficiently

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	3		1				1	3	2	
2	2	1		2			3	1		
3		2	3			1			2	3

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	2	1
2		
3	1	3

PHYSICAL FITNESS AND WELLNESS

UNIT I Physical Fitness: Meaning and Definition, Concepts, Techniques and Principles. Types and Components of Fitness : Health Related Fitness-Motor and Skill Related Fitness - Current trends in fitness and conditioning, components of total health fitness and the relationship between physical activity and lifelong wellness. Meaning and Definition of Wellness – Components of wellness.

UNIT II Nutrients: Nutrition labeling 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. Body Image- Factors influencing body Image.

UNIT III Aerobic Exercise :Cardio respiratory Endurance Training; proper movement forms, : 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: 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 dynamic, static), Develop basic competency in relaxation and breathing techniques. Pilates, Yoga.

REFERENCE

1. David K. Miller & T. Earl Allen(1989), Fitness, A life time commitment, Surjeet Publication Delhi.
2. Dificore Judy, the complete guide to the postnatal fitness, A & C Black Publishers Ltd. Bedford row, London 1998
3. Uppal A.K (1992), Physical Fitness, Friends Publications (India),
4. Warner W.K. Oeger& Sharon A. Hoeger(1990) Fitness and Wellness, Morton Publishing Company.
5. Elizabeth & Ken day (1986), Sports fitness for women, B.T. Batsford Ltd, London.
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7. Lawrence, Debbie (1999), Exercise to Music. A & C Black Publishers Ltd. 37, Sohe Square,London.
8. Robert Malt(2001), 90 day fitness plan, D.K. publishing, Inc. 95, Madison Avenue, New York

COURSE OUTCOME

At the end of the course, the student will be able to:
CO-1 Explain group mechanisms and group psychology in a sports context
CO-2 Reflect upon motivational psychology as applied to sports activities
CO-3 Formulate relevant constructs of exercise psychology
CO-4 Demonstrate the ability to discuss sociological theories, concepts, and ideas in large and small groups and to express empirically as well as

theoretically-based opinions.
CO-5 To apply core sociological theories to specific social problems in order to analyze social problems.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	1		3		1			2	1	2
2		2	1					1		3
3	1	3	1		1	1	2			2

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	1	3
2		2
3	1	

theoretically-based opinions.

CO-5 To apply core sociological theories to specific social problems in order to analyze social problems.

MAPPING'S OF CO'S AND PO'S

Course Outcomes	Programme Outcome									
	1	2	3	4	5	6	7	8	9	10
1	1		3		1			2	1	2
2		2	1					1		3
3	1	3	1		1	1	2			2

MAPPING'S OF CO'S AND PSO'S

COURSE OUTCOMES (CO)	PROGRAM SPECIFIC OUTCOMES (PSO)	
	1	2
1	1	3
2		2
3	1	

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