Faculty of Sports Medicine & Physiotherapy

SYLLABUS

FOR

M.Sc. SPORTS NUTRITION
(SEMESTER: I – IV)
(Credit Based Evaluation and Grading System)

Session: 2019-20

GURU NANAK DEV UNIVERSITY
AMRITSAR

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M.Sc. (Sports Nutrition) (Semester System)
(Credit Based Evaluation and Grading System)

Semester – I:

<table>
<thead>
<tr>
<th>Course No.</th>
<th>C/E/I</th>
<th>Course Title</th>
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* C.F. (carried forward to 4th semester)

Semester – II:

*List of Elective Courses:

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1. Evidence Based Practice in Allied Health Sciences – SPL590
2. Women Health and Exercise – SPL591

Note:-
PSL-053 ID Course Human Rights & Constitutional Duties (Compulsory Paper)
Students can opt. in any semester except Semester 1st. This ID Paper is one of the total ID Papers of this course.
### Semester – III:

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* Total marks from I to IV semesters
A. Theory (Examination)

Instructions to Paper Setters:
The paper setters should set 8 questions (of equal marks), two in each of the four sections (Section A to D, corresponding to the distribution in the syllabi). Further, the paper setters shall be instructed to make sub-sections (not exceeding 4) of the questions and allocate appropriate marks to each section. The candidates shall be asked to attempt five questions by selecting one question from each section and the fifth question may be attempted from any section.

* 1 hr of theory and dissertation is counted as 1 credit. 2 hr of practical /clinical training is counted as 1 credit.

B. Practical Examination

Practical examination of Clinical Training will be conducted once at the end of 4th semester which includes all the practical work during the entire course of four semesters

Practical Attachments:
To enable the students to acquire practicing in hand on skills, maximum emphasis will be laid on regular practical classes, demonstration and clinical practice. The students will undergo Clinical / Field training in GNDU Campus / Sports Authority of India (Various Centres), Government Medical College Amritsar, other sporting centres, Fortis Hospital, Nutritional counselling centre GNDU.

C. Dissertation

At the end of first semester students are expected to have a research proposal ready. At the end of second semester students are expected to be ready with the pilot study. At the end of third semester data collection, analysis & results should be completed. In fourth semester the work should be presented in the form of final dissertation and manuscript should be ready for communication. The student will be awarded grade for the total number of credits earned in dissertation in I, II, III and IV semesters of study at the end of the IV semester.

* The credits earned by a candidate in practical and dissertation during different semesters will be evaluated at the end of the 4th semester and the grade will be determined accordingly.

* A candidate shall be required to maintain minimum of 4 SGPA at the end of each semester. A student getting ‘F’ grade in any course in this discipline will be treated as having failed in that course and shall have to repeat the core/elective courses/or repeat/opt. another course in lieu of interdisciplinary/outside department course with approval of Board of Control, and will have to obtain at least ‘P’ grade in that course within specified period as per the prevailing rules. The weights of ‘F’ Grade will not be counted in SGPA or CGPA (according to syndicate proceeding, dated: 24.5.2010, para no. 34).

Interdisciplinary/Optional Course: to be offered from outside the department
M.Sc. (Sports Nutrition) (Semester-I)
(Credit Based Evaluation and Grading System)

SNL401: HUMAN NUTRITION AND METABOLISM

L  T  P  Max Marks: 100
4  0  0  Mid Term: 20

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
1. The Basis of a Healthy Diet
2. Nutritional Classification of Foods
3. Food Pyramid
4. My Plate

SECTION-B
1. Classification, structure, functions, absorption and metabolism of carbohydrates, fats and proteins
2. Vitamins
   a) Fat-Soluble Vitamins
   b) Water-Soluble Vitamins
3. Minerals
   a) Major Minerals
   b) Trace Minerals
4. Antioxidants
5. Fibers

SECTION-C
1. Assessment of Nutritional Status
2. Energy Measurement
   a) Measurement of energy expenditure by direct and indirect calorimetry
   b) Basal metabolic rate, respiratory quotient, specific dynamic action
   c) Factors effecting BMR
   d) Prerequisites of measuring BMR and RMR
   e) Specific dynamic action of food
   f) Regulation of energy balance

SECTION-D
1. Aerobic energy systems
   a) Aerobic energy pathways
   b) Energy Balance and Weight Control
   c) Causes & Concerns of obesity epidemic
2. Anaerobic energy pathways
M.Sc. (Sports Nutrition) (Semester-I)
(Credit Based Evaluation and Grading System)

References:
M.Sc. (Sports Nutrition) (Semester-I)
(Credit Based Evaluation and Grading System)

SNL402: HUMAN PHYSIOLOGY

Max Marks: 100
Mid Term: 20
Major Exam: 80

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. Introduction to human physiology, cells, tissues, organs and system organization.
2. Cell structure, transport through cell membrane, Classification of tissue.

SECTION-B

1. Nervous system - central and autonomic nervous system, organization, Structure and properties of nerve, transmission of impulse, resting and action potential, Reflex action, reflex arc.
2. Endocrine system - Different endocrine glands and their hormones, major functions, mode of action, feedback mechanism.
3. Digestive system - organs of GI tract and their major functions.

SECTION-C

1. Cardiovascular system - anatomy of heart and blood vessels, conduction system in heart, Normal ECG. Systemic, coronary and pulmonary circulation. Cardiac cycle, cardiac output and blood pressure.
2. Respiratory system - anatomy, mechanism of respiration, lung volume and capacities, external and internal respiration, transport of O2 and CO2
3. Excretory system - anatomy, function, renal circulation, auto regulation of the circulation, Structural and functional unit, Urine formation.

SECTION-D

2. Immune system - Innate, acquired and active immunity, cell mediated and humoral mediated immunity. Auto immune disease and Immune deficiency disorders.

References
M.Sc. (Sports Nutrition) (Semester-I)
(Credit Based Evaluation and Grading System)

SPL504: Research & Educational Methodology

L T P Max Marks: 100
4 0 0 Mid Term: 20
Mid Term: 20
Major Exam: 80

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
1. Basic concepts-Importance of research in clinical practice, Problem identification, Ethical issues in research, Literature review, meta-analysis
2. Types of Research-Qualitative & Quantitative, Descriptive & Experimental, Longitudinal & Cross-sectional, Survey Research.

SECTION-B
1. Processing and analysis of data-Central tendency, Dispersion, Correlation, regression analysis, multiple correlation and regression.
2. Sampling and testing of hypothesis-Concept of probability, Standard deviation, confidence intervals, null and alternate hypothesis, level of significance, correlation coefficients, ANOVA, Tukey's HSD.

SECTION-C
2. Presenting Research-Strategies of paper writing, Design of paper writing, Tactics of paper writing, Reasons for rejection, Where to publish, Poster presentation (Poster space, Standard format), Plagiarism.
3. Oral Presentations at Conferences/Seminars-Preparing presentation, Duration of presentation, what to present

SECTION-D
Educational Methodology-Principles and methods of teaching with respect to physiotherapy students and client: Strategies and planning of teaching, curriculum development, formation of course objective, time management, role of Audio – visual aids, method of knowledge dissemination.

Practicals:
The student will be required to review the literature thoroughly and prepare a research proposal for dissertation in consultation with his/her supervisor by the end of the semester.

References:
5. Hicks: Research for Physiotherapists, Churchill Livingstone
SNL403: Fundamentals of Psychology and Counseling for Behaviour Change

L  T  P  Max Marks: 100
4  0  0  Mid Term: 20

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
1. The psychology of food choices, food Purchase and eating behavior
   a. Models of food choice
   b. Biological & Genetic influences on energy and nutrient intake
   c. Neurobiology of food intake
2. Social and psychological models of food choice
   Role of family and peers, Food and Culture, mood, emotions and food choice, Food cravings and addiction, Food Rewards

SECTION-B
1. Influences of Media on food choice
   a. Psychological stress among sports persons & its impact on food choices, consumption and performance
   b. Food choices across the life span.
   c. Ethnic, religious and economic influences on food choices
   d. Factors affecting the consumer healthy food choices

SECTION-C
1. Applications of food psychology for health maintenance and fitness
   a. Strategies to change dietary behavior
   b. Optimism and intention
   c. Strategic automisation
   d. Using stages of change model to change dietary behavior
   e. Behavior modification strategies to influence food and nutrition choices
   d. Theory of planned behavior and healthy eating

SECTION-D
Nutritional Care Process and Counseling Strategies
   a. Nutritional Care Process; Role and skills of a sport dietician.
   b. Detailed study of Nutrition Counseling theories and strategies
   c. Cognitive behavior therapy, Rational Emotive Behavioral Therapy
   d. Stress management & Counseling;
   e. Tools of psychological testing
   f. Counseling of individual sports persons and teams

References:
SNP410: BASICS OF NUTRITION AND DIET ANALYSIS PRACTICAL

L   T   P  
0   0   8

1. Identification of different food stuffs, weight and measures and cooking terms.
2. Basic five food groups, dietary guidelines and food pyramid
3. Dietary Guidelines for normal individuals and special needs
4. Meal Planning and Preparation:
   Principles of meal planning
5. Use of Food Composition Tables.
6. Use of Food Exchange Lists.
7. Assessment of nutritional status of community by using dietary survey & anthropometric measurements.
8. Prepare following recipes and calculate their nutritive value.
   a. Prepare 5 high protein and high energy recipes.
   b. Prepare 5 high carbohydrate, moderate protein & low fat recipes.
   c. Prepare 5 high fiber and low glycemic index recipes.
   d. Prepare 5 low sodium, low fat and high fiber recipes
   e. Prepare 5 iron rich recipes and calcium rich recipes.
SNL451: THERAPEUTIC NUTRITION

Max Marks: 100
Mid Term: 20
Major Exam: 80

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. Therapeutic modification of the normal diet.
   Normal, soft and liquid diets and enteral feeding.

2. Etiology, clinical and bio-chemical manifestation and dietary counselling for the following diseases: Review of Gastro intestinal diseases.
   a. Peptic ulcer - gastric and duodenal ulcers.
   b. Diarrhoeas - acute and chronic.
   c. Constipation - atonic and spastic.
   d. Mal absorption syndromes – Carbohydrates, Lactose intolerance and fat intolerance sprue, celiac diseases.

SECTION-B

1. Liver Diseases:
   a. Infective Hepatitis, Cirrhosis.
   b. Gall bladder diseases.

2. Diabetes: Juvenile and adult, onset, types.
   Type-I and Type-II diabetes mellitus, Gestational diabetes mellitus, Types of insulin and their action, Oral hypoglycemic drugs.

SECTION-C

1. Cardiovascular disorders: Hypertension, Atherosclerosis, coronary heart disease, Febrile conditions, acute and chronic.

2. Joint pain and stiffness, gout, fractures

SECTION-D

1. Renal Disorders:
   Glomerulonephritis, Nephrotic syndrome, acute and chronic renal failure

   Nutrition in various stages of cancer, chemotherapy, role of antioxidants in cancer.

3. Nutrition in surgery
   Bariatric surgery, ICU patients

Practical:
Assessment of causative factors and metabolic changes in various diseases/disorders
Dietary assessment in disease conditions
Planning of therapeutic diets based on patients needs for various diseases/disorders
M.Sc. (Sports Nutrition) (Semester-II)
(Credit Based Evaluation and Grading System)

References:
2. Williams and Wilkins Co, Diabetes Mellitus, U.S.A.
9. Anita, F.P., Clinical Dietetics and Nutrition
10. Pyke, Maonus, Food Science and Technology.
SNL452: DIETARY SUPPLEMENTS AND FUNCTIONAL FOODS

Max Marks: 100
Mid Term: 20
Major Exam: 80

Instructions for the Paper Setters:
Eight questions of equal marks (specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
1. Anti-doping regulations and harmful effects of use of steroids & other banned substances
2. Dietary Supplements: Regulations and Classification
   a. Definition and regulations of Dietary Supplements (country-specific)
   b. Classification of Dietary/Nutritional Supplements

SECTION-B
1. Composition, Benefits and Applications of Nutritional Supplements
   a. Macronutrient Supplements:
      i. Pure proteins (e.g. Whey, Casein, Egg albumen, Soy protein, Pea protein & other vegan proteins/protein blends), Protein bars, Weight gainers; Amino acid supplements - Glutamine, Arginine
      ii. Carbohydrate supplements & EFAs, Glycerol
      iii. Meal replacement powders, Ready To Drink protein shakes (RTDs)
      iv. Sports drinks & Sports gels

   b. Micronutrient Supplements:
      i. Benefits/Mechanism of action and Applications
      ii. Vitamins: Ergogenic role of B-complex vitamins, Vitamin B12 & folic acid, Vitamin D supplements’, Multi-vitamin supplements
      iii. Mineral supplements: Calcium-Magnesium-, Iron supplements, supplements, Electrolyte replacement drinks
      iv. Antioxidant vitamins & mineral supplements

SECTION-C
1. Benefits/Mechanism of action and Applications of Herbal Supplements
   a. Ergogenic Herbal supplements-: Ashwagandha, Rhodiola, Shilajit, Ginseng, Grape seed extract,
   b. Herbal Testosterone-boosters (e.g. Tribulus terristris, Nettle root, Long jack root etc)

SECTION-D
1. Functional foods/phytochemicals
   a. Green tea extract, Tart cherries, Caffeine, Curcumin, Phytosterols, Flavonoids, Beta-alanine, L-Carnitine

References:
M.Sc. (Sports Nutrition) (Semester-II)  
(Credit Based Evaluation and Grading System) 

SNL453: WEIGHT MANAGEMENT, REHABILITATION AND FITNESS  
L T P Max Marks: 100  
4 0 0 Mid Term: 20  

Instructions for the Paper Setters:  
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.  

SECTION-A  
Adult and Childhood obesity  
a. Prevalence, Types, etiology, Theories of obesity, Factors affecting, Comorbidity.  

SECTION-B  
1. Regulation of energy intake and expenditure, control of appetite and food intake, Foods selection and consumption pattern  
2. Hormonal control: Insulin, Thyroid & estrogen.  

SECTION-C  
1. Care and cure in rehabilitation, precaution.  
2. Necessity of continuous monitoring and necessary emergency procedures.  

SECTION-D  
Components of fitness –  
a. Total Fitness (health related fitness) and Athletic fitness.  
b. Body Composition and types, Cardiorespiratory Fitness, Muscular endurance and power, Flexibility.  
c. Athletic Fitness- Balance, Coordination, Agility, reaction Time etc.  

Practical:  
Determination of energy intake and expenditure  
Assessment of cardio respiratory fitness  
Assessment of muscular fitness- Muscle strength, endurance and flexibility  

References  
2. Present Knowledge in Nutrition; Ed, Myrtle L. Brown, ILSI Press.  
Instructions for the Paper Setters:
Eight questions of equal marks (specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any section.

SECTION-A
Cardiovascular system and Exercise
1. Overview of the heart, blood vessels, and blood composition:
   - Heart size in the athlete vs. normal; difference in strength/power vs. endurance trained heart:
   - Acute HR, BP, SV, a-v-O2 diff, cardiac output, blood flow responses to exercise at various intensities; from rest to maximal.
2. Chronic adaptations to endurance exercise training; various modes of training with respect to:
   - Heart rate, Blood pressure, Stroke volume, Cardiac output, a-v-O2 difference,
3. Vascularization and exercise training
4. Blood pressure responses to exercise

SECTION-B
Exercise and Respiratory system
1. The basics of Ventilation:
   a) Pulmonary anatomy
   b) Mechanics of ventilation
   c) Static and dynamic lung volumes
   d) Dead space and alveolar ventilation
   e) Minute Ventilation
   f) Acute and chronic responses to exercise
2. Control and regulation of ventilation:
   a) Neural-humoral mechanisms
   b) Central inputs to the inspiratory center
   c) Central Command from the motor cortex
   d) Humoral & Peripheral input

SECTION-C
Skeletal & Neuromuscular and Endocrine System
1. Skeletal muscle structure and contractile properties:
   a) Types of skeletal muscle and how they are important in various sports activities
   b) Architectural properties
   c) Neurons, motor unit recruitment and integrative control of movements
   d) Neurological Control of Movement
   e) Neuromuscular Adaptations to Resistance Training
   f) Size principle of motor unit recruitment
   g) Contractile properties
   h) Types of contractions
   i) Experimental models of muscle contraction
   j) Length-tension relationship
   k) Force-velocity relationship
M.Sc. (Sports Nutrition) (Semester-II)
(Credit Based Evaluation and Grading System)

2. **Training for muscle strength, endurance, and power**
   a) Principles of skeletal muscle adaptations
   b) Principles of endurance conditioning
   c) Central and neuromuscular fatigue
   d) Ergogenic aids that enhance muscle size and function
   e) Muscle glycogen; super-compensation during / before athletic competition.

3. **The tissues of the human skeletal system**
   Joints Adaptive abilities and capacity of the skeletal system to exercise

4. **Acute effects of exercise training on hormone levels and hormone activity**
   Control and regulation mechanisms involved in hormone homeostasis during exercise
   Chronic effects of exercise training on hormone levels, especially the elite athlete
   Measurement of blood pressure, sweat rate during exercise

**SECTION-D**

**Applied Exercise Physiology**

1. Human energy metabolism during exercise
   Human energy systems and fatigue during exercise.

2. Training for aerobic and anaerobic power
   Training principles
   Anaerobic/ aerobic changes with training
   Factors affecting training response
   Exercising during pregnancy

3. Muscular strength
   Strength and Resistance training
   Structural and functional adaptations to resistance training
   Body composition and physical performance

**REFERENCES:**

**Textbooks:**

**Peer-reviewed journals**
- **Strength and Conditioning Journal**
- **Journal of Strength and Conditioning Research**
- **Medicine and Science in Sports and Exercise**
- **American Journal of Physiology**

**Online resources**
- [www.acsm.org/](http://www.acsm.org/)
- [www.nsca-lift.org/](http://www.nsca-lift.org/)
- [www.the-aps.org/](http://www.the-aps.org/)
- [www.faseb.org](http://www.faseb.org)
M.Sc. (Sports Nutrition) (Semester-II)
(Credit Based Evaluation and Grading System)

SPL590: EVIDENCE BASED PRACTICE IN ALLIED HEALTH SCIENCES (ELECTIVE)

L   T   P                                      Max Marks: 100
3   0   0                                      Mid Term: 20

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
1. Introduction to evidence–based complementary medicine
2. Evidence–based health care
3. Evidence–based practices
4. Evidence–based decision making and management

SECTION-B
1. Types of evidence
   a. Definition of evidence
   b. Forms of evidence
   c. Randomized controlled trials

SECTION-C
1. Case–control studies
2. Cohort studies

SECTION-D
1. Applying the evidence
   a. Pathways, guidelines and protocols
   b. Future directions for clinical effectiveness
2. Evaluation of effectiveness and efficiency of the process

References:
1. Martin Dawes, Philip Davies, and Alistair Gray, Evidence–Based Practice: A Primer for Health Care Professionals. Elsevier Publication.
M.Sc. (Sports Nutrition) (Semester-II)  
(Credit Based Evaluation and Grading System)  

*SPL591: WOMEN HEALTH AND EXERCISE (ELECTIVE)*

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**SECTION-A**
1. Gender difference in muscle morphology
2. Diagnosis and Treatment of Urinary Incontinence and Prolapse

**SECTION-B**
1. Anemia
2. Hypertension in Women

**SECTION-C**
1. Bone health: assessment and treatment of osteopenia and osteoporosis
2. Evaluation and Treatment of Common Musculoskeletal Complaints

**SECTION-D**
1. Exercise for the childbearing year
2. Exercise for adolescence
3. Exercise for the older woman

**References:**
SNL501: NUTRITION FOR RESISTANCE AND POWER SPORTS

Instructions for the Paper Setters:
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SECTION-A
Nutrition for strength sport athletes
a. Types and characteristics of strength or high intensity sports (sprinting, throwing, body building etc)
b. Physiology of energy systems,
c. Nutritional requirements- macronutrients- carbohydrates, fats proteins
d. Muscle building- post exercise anabolic window
e. Impact of resistance training on body composition of athletes in strength sports
f. Micronutrient requirements
g. Nutrient periodization in training and competition

SECTION-B
Nutrition for weight class sports- combat sports, individual events
a. Types and characteristics- physiological needs, body composition and energy systems used.
b. Macro and micronutrient requirements in training and competition.
c. Hydration guidelines in weight class sports
d. Making weight- weight loss and gain in training and competition-
e. Strategies to promote healthy weight loss in athletes

SECTION-C
Nutrition for racket sport athletes- badminton, squash, tennis
a. Characteristics- physiology, energy system, and body composition, duration of match, training.
b. Macro and micronutrient requirements in training and competition
c. Dietary and hydration strategies for athletes in different periods of training and competition

SECTION-D
Use of Nutritional supplements in strength/power sports- use, effects, efficacy and safety
a. Creatine monohydrate, Sodium bicarbonates, Nitrates
b. B-Alanine, Caffeine
c. Protein supplements
d. Fat burners
References:


SNL502: NUTRITION FOR TEAM SPORTS

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SECTION-A

Classification and physiology of field and court sports
a. Type and characteristics of team sports - field and court sports
b. Physique, physiology, body composition and energy metabolism in team sports.

SECTION-B

Macronutrient needs of team sport athletes according to training and position on the field.
a. Carbohydrate intake - pre, during and post event/training.
b. Proteins and amino acids - type, amount and timing of ingestion
c. Fat requirements.

SECTION-C

Micronutrient requirements of team sport athletes
a. Role of vitamins and minerals in energy metabolism, blood formation, bone health, and antioxidants.
b. Fluid and electrolyte requirements - Hydration strategies in athletes based on rules of the sport, available time and opportunities to hydrate on the field.

SECTION-D

Practical nutrition guidelines for different team sport athletes
a. Field sports - hockey, football, rugby
b. Batting sports - cricket, baseball, softball
c. Court sports - volleyball, basketball, netball.
d. Indian team sports - kabaddi, kho-kho

References:
M.Sc. (Sports Nutrition) (Semester-III)
(Credit Based Evaluation and Grading System)

SNL503: DIETARY PLANNING FOR TEAM SPORTS, POWER AND ENDURANCE SPORTS

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SECTION-A
1. Planning and preparation of diets for
   a. Sprinting
   b. Throwing
   c. High jump and long jump
   d. Gymnastics

SECTION-B
2. Planning and preparation of diets for Weight class sports
   a. Boxing
   b. Wrestling
   c. Weightlifting
   d. Body building

SECTION-C
3. Planning and preparation of diets for Racket sport athletes
   a. Badminton
   b. Squash
   c. Tennis/Table-tennis

SECTION-D
3. Planning and preparation of diets for team sports
   a. Cricket
   b. Hockey
   c. Football
   d. Kabbadi
   e. Basketball

Practical:
Assessment of characteristics, physiology and body composition needs of different sports
Planning and preparation of diet of sports persons of various sports

References:
M.Sc. (Sports Nutrition) (Semester-III)
(Credit Based Evaluation and Grading System)

**SYL501: EXERCISE TESTING FOR HEALTH- AND SKILL-RELATED COMPONENTS OF FITNESS**

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**SECTION-A**

**Pre-test considerations**
1. Benefits associated with physical activity
   - Physical activity and fitness terminology
   - Public health perspective for current recommendations
   - Benefits of regular physical activity
   - Exercise dose response relationship
2. Risks associated with physical activity
   - Sudden death among young individuals and athletes
   - Exercise events in those with sickle cell trait
   - Exercise-related cardiac events in adults
   - Safety considerations
   - Risks associated with exercise testing
3. Pre-participation screening algorithm
   - Risk stratification and medical clearance
   - Pre-exercise test evaluations
   - Baseline measurements
   - Calculation of HR MAX and 85% HR max depending on protocol
   - Additional preparticipation assessments
   - Exercise testing and testing supervision recommendations
   - Population considerations
   - Children, elderly, apparently healthy, etc.
4. Test Order
   - Equations used to estimate aerobic power from TM protocols
   - Cycle ergometer protocols (arm and leg)
   - Equations used to estimate aerobic power from cycle ergometer protocols
   - ACSM guidelines for when to stop a test
   - Calculations used to estimate aerobic power from other variables
Test protocols used for measuring the health- and skill-related components of fitness

1. CV endurance field tests
   - VO2max testing
   - Norm tables
   - Maximal vs submaximal tests
   - Modes of testing
2. Muscular strength, endurance, and flexibility
3. Body composition
4. Balance, agility, coordination, reaction time, and anaerobic power

SECTION-C

Exercise testing modifications for cardiac patients

1. Pre-participation screening and risk stratification
   - Medical history
   - Medical clearance
   - Physician approval for testing
   - Risk factor identification
   - Medical emergency equipment
   - Risks of cardiac events during exercise testing
2. Diagnostic exercise testing
   - Exercise testing for disease severity and prognosis
   - Functional exercise testing
   - Measurements during exercise testing
   - Exercise testing after an MI
   - Exercise testing protocols, modalities, and testing supervision recommendations
   - Exercise testing for return to work
   - Indications for stopping a test
   - Post-exercise period
   - Cognitive skills required to competently supervise exercise tests
   - Exercise testing with imaging modalities
     - Exercise echocardiography
     - Exercise nuclear imaging
     - Pharmacologic stress testing
     - Electron beam computed tomography
   - Interpretation of clinical exercise test data
SECTION-D

1. Risk stratification for cardiac patients
   Inpatient rehabilitation programs
   Clinical indications and contraindications for inpatient and outpatient cardiac rehabilitation
   Outpatient exercise programs
   Recommendations for supervision and monitoring of exercise
   Signs and symptoms below which an upper limit for exercise intensity should be set
   FITT principle and progression of exercise for the cardiac patient
   Guidelines for exercise prescription for cardiac patients without an entry exercise stress test
   Benefits of endurance exercise training in cardiac patients
   Benefits of resistance training for cardiac patients
   Risks of cardiac events during cardiac rehabilitation
   Prevention of exercise-related cardiac events
   Exercise training for return to work
   Special cardiac patient populations

2. Myocardial ischemia
   Congestive heart failure
   Pacemakers and implantable cardioverter defibrillators
   Cardiac transplant recipient
   Coronary bypass graft and percutaneous transluminal coronary intervention

Practical:

Assessment of oxygen consumption using different platforms

ECG Interpretation

References:

SYL551: SPORTS PSYCHOLOGY

L T P Max Marks: 100
4 0 0 Mid Term: 20

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SECTION-A
1. History and current status of Sports Psychology.
2. Personality Assessment and sports personality.
   a. Theories of personality
   b. Personality assessment
3. Attention and perception in sports.
   a. Attention
   b. Perception
4. Concentration training in sports.
   a. Basic principles of concentration
   b. Concentration training
   c. Concentration awareness exercises
5. Motivational orientation in sports.
   a. Athlete’s needs of motivation
   b. Motivational inhibitors
   c. Motivational techniques

SECTION-B
1. Pre-competitive anxiety.
   a. Source of PCA
   b. Effect of PCA on performance
2. Relaxation Training.
   a. Definition
   b. Types of relaxation trainings
      i) Progressive muscle relaxation
      ii) Breathing exercises
      iii) Yognidra
      iv) Transcendental meditation
3. Aggression in sports.
   a. Theories of aggression
   b. Management of aggression
4. Role of Psychology in Dealing with injuries.
5. Eating disorders.
   a. Etiology of eating disorders
   b. Types of eating disorders
   c. Complications of eating disorders
6. Goal setting i) Principles and ii) strategies
Doping and stress management
1. Psychological aspect of doping
2. Psychological preparation of elite athletes a. Concept of psychological preparation
3. Biofeedback training
4. Mental imagery

SECTION-D

References
1. Sports Psychology by Yadvinder Singh Publisher: Sports Publications
2. Sports Psychology Basics by Andrew Caruso Publisher: Reedswain
3. Key Concepts In Sports Psychology by Ellis Cashmore Publisher: routledge fondation
5. Basic Aspect Of Sport Psychology by D C Lal Publisher: Sports Publications
6. Essential Sport Psychology by Murphy Shane Publisher: Human Kine
7. Doing Sport Psychology by Andersen Mark Publisher: Human Kine
8. Sport Psychology: Contemporary Themes by Lavallee David Publisher: Palgrave M
9. Sport Psychology Interventions by Murphy Shane M Publisher: Human Kine
10. Sport Psychology (with Infotrac) by Arnold D Leunes Publisher: Wadsworth Publishing Company
SNL551: DIET PLANNING FOR SPECIAL GROUPS

L  T  P  Max Marks: 100
4  0  6  Mid Term: 20

Instructions for the Paper Setters:
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SECTION-A
1. Nutritional concerns of travelling and vegan athletes
2. Athletes performing under altered climatic conditions
   a. High altitude
   b. Mountaineers
   c. High and low climatic temperature etc.
3. Nutrition guidelines for athletes with physical disabilities

SECTION-B
Management of selected nutritional problems among sportsperson
   a. Anaemia - causes, consequences and role of nutrition in the prevention and management
   b. Osteoporosis - Bone Physiology, Effect of Nutrition, age, sex and exercise on bone health, Preventive and curative strategies of osteoporosis

SECTION-C
1. Nutritional management of Exercise Injuries
   a. Eating Disorders among sports persons, Types of Sports with weight restrictions
   b. Need for Weight Loss & weight gain, Negative aspects of weight loss and recovery strategies
   c. Dietary & Lifestyle Approaches for weight and fat loss and/gain

SECTION-D
1. Nutritional Management of clinical conditions among sports
   a. Diabetes mellitus
   b. Hypertension, atherosclerosis
   c. Gastro intestinal diseases-Peptic Ulcer, GI disturbance due to anxiety, Celiac disease, IBS
Practical:
Nutritional assessment and management of various therapeutic conditions in sports persons
Nutritional counselling for athletes with physical disabilities
Assessment of special nutritional concerns of travelling athlete and vegetarian athlete
Weight gain/ weight loss management

References:
   John Wiley and Sons,
   approach to weight
M.Sc. (Sports Nutrition) (Semester-IV)
(Credit Based Evaluation and Grading System)

SNL553: FOOD HYGIENE AND MANAGEMENT

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SECTION-A

1. Characteristics of food
   Types of food; What is quality? Quantitative aspects of quality
   Sensory quality
   Nutritional quality
   Foods recommended for use in lunchrooms and kiosks

2. Food Purchasing
   Food Buyer
   Purchasing activity
   Buying food

3. Receiving and Storage of Food
   Receiving
   Storage

SECTION-B

1. Menu Planning
   Why plan menus?
   Planning menus
   Writing menus
   Types of menus
   Construction of menus
   Menu display

SECTION-C

2. Food production
   Food production system
   Food production process
   Effect of preparation and cooking methods on the nutritional quality of foods
   Some large quantity cooking techniques
   Effective use of leftovers
   Holding techniques
M.Sc. (Sports Nutrition) (Semester-IV)
(Credit Based Evaluation and Grading System)

SECTION-D

1. **Hygiene and Sanitation**
   Environmental hygiene and sanitation
   Hygiene in food handling
   Personnel hygiene

2. **Food Adulteration**
   Types of adulterants
   Intentional adulterants
   Incidental adulterants
   Food laws
   Food standardisation and regulation agencies in India
   International standards

**References**

1. Mohini Sethi, Surjeet Malhan, Catering Management An Integrated Approach, New Age international (P) limited, New Delhi.