

AC _____
Item No. _____

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	M. Sc. (Home Science) Branch IC: Sports Nutrition Semester III and IV
2	Eligibility for Admission	<ul style="list-style-type: none"> • B.Sc. With Home Science (general or any specialization) • B.Sc. with Microbiology / Biochemistry / Life Sciences / Biotechnology/ Zoology/ Botany/Biological Science—6 units or Combinations • B.Sc. with Chemistry along with Microbiology/ Biochemistry/Life Sciences- Combination • PG Diploma in Dietetics and Applied Nutrition/ Clinical Nutrition • B.Sc. with Nursing / Physiotherapy/ Bachelor of Physical Education, B.Sc. Human Science • Medical graduates any discipline (MBBS) • Learners of any gender are eligible to apply for admission to the course. • Minimum 50% at T.Y.B.Sc. examination. • As the course is interdisciplinary course admission criteria will be based on merit cum qualifying entrance examination as per circular No/ICC/2014-15/13/II-K_pg2of4
3	Passing Marks	40% (Theory) and (Practical)
4	Ordinances / Regulations (if any)	Eligibility- O.5088 from circular dated 10th December, 2015 Attendance- O. 6086 with effect from 2014-15 and thereafter
5	No. of Years / Semesters	1 years/ 2 Semesters
6	Level	P.G. / U.G./Diploma / Certificate (Strike out which is not applicable)
7	Pattern	Yearly- Semester (Strike out which is not applicable)
8	Status	New/ Revised (Strike out which is not applicable)
	To be implemented from Academic Year	From Academic Year 2017-18

Date: 17.04.2017

Signature :

Name of BOS Chairperson / Dean : Dr Geeta Ibrahim

Cover Page

UNIVERSITY OF MUMBAI



Essentials Elements of the Syllabus

1	Title of the Course	Syllabus for Two Years M. Sc. (Home Science) Branch IC: Sports Nutrition- Semester III and IV
2	Course Code	PSHSIC
3	Preamble / Scope	<p>The Masters in Home Science specializing in Sports Nutrition is designed to impart advanced knowledge and skills that is life oriented, career and community oriented. It has special relevance to sports nutrition, entrepreneurship skills, marketing and management skills and research in sports nutrition and related areas equipped with a 2 month hands on training/exposure with sports associations/institutes in the form of internship.</p> <p>Objective of Course / Course Outcome</p>
4		<ol style="list-style-type: none">To impart knowledge on the Nutritional basis for enhanced:<ul style="list-style-type: none">- exercise and sports performance with due emphasis on- Physiology and body composition,- Nutritional requirements- Weight Management- Holistic health- Ergogenic aidTo prepare students for a career in fitness academies, sports institutes, educational and health institutions; pharmaceutical industries and corporate sectors. <p>Eligibility</p> <ul style="list-style-type: none">• B.Sc. With Home Science (general or any specialization)• B.Sc. with Microbiology / Biochemistry / Life Sciences /Biotechnology/ Zoology/ Botany/Biological Science—6 units or Combinations• B.Sc. with Chemistry along with Microbiology/ Biochemistry/Life Sciences- Combination• PG Diploma in Dietetics and Applied Nutrition/ Clinical Nutrition• B.Sc. with Nursing / Physiotherapy/ Bachelor of Physical Education, B.Sc. Human Science• Medical graduates any discipline (MBBS)• Learners of any gender are eligible to apply for admission to the course.• Minimum 50% at T.Y.B.Sc. examination.• As the course is interdisciplinary course admission criteria will be based on merit cum qualifying entrance examination as per circular No/ICC/2014-15/13/II-K_pg2of4

Fee Structure

**M.Sc. (HOME SCIENCE)
BRANCH IC : SPORTS NUTRITION
SEMESTER III AND IV**

PROPOSED FEE STRUCTURE 2017-18

No.	*Particulars of fees for M.Sc (Home Science) Semester III and IV	Amount
1	Tuition	25000.00
2	Laboratory	5000.00
3	Library Fees	2500.00
4	Gymkhana Fees	500.00
5	Identity Card	75.00
6	Examination Fees	3120.00
7	Magazine	100.00
8	Computer Laptop	500.00
9	Convocation fee	250.00
10	University Share of Tuition Fees	800.00
11	Project Evaluation	1000.00
	TOTAL	38845.00

*** FEES ARE DUE TO BE REVISED**

7	No. of Lectures	12 periods per week
8	No. of Practical	12 periods per week
9	Duration of the Course	1 year
10	Notional hours	16 periods per week
11	No. of Students per Batch: 20	
12	Selection- Merit at qualifying T.Y.B.Sc. examination (Semester V and VI) and Entrance Examination	
13	Assessment- included in the syllabus copy as Scheme of Examination	
14	Syllabus Details – included in the syllabus copy	
15	Title of the Unit – included in the syllabus copy	
16	Title of the Sub-Unit – included in the syllabus copy	
17	Semester wise Theory – included in the syllabus grid	
18	Semester wise List of Practical – included in the syllabus grid	
19	Question Paper Pattern – included in the syllabus copy as Scheme of Examination	
20	Pattern of Practical Exam – included in the syllabus copy as Scheme of Examination	
21	Scheme of Evaluation of Project / Internship- – included in the syllabus copy	
22	List of Suggested Reading – included in the syllabus copy	
23	List of Websites – included in the syllabus copy wherever applicable	
24	List of You-Tube Videos –Not Applicable	
25	List of MOOCs –Not Applicable	

M.Sc. (HOME SCIENCE)

BRANCH-IC: SPORTS NUTRITION

SEMESTER-III

(Revised w.e.f. June 2017)

Course Code	Title	Internal Assessment Marks	Semester End Exam	Total Marks	Periods/ Week/ Batch/ Division	Credits
PSHSIC301	Nutrition for Resistance and Power Sports	40	60	100	3	4
PSHSIC302	Nutrition for Team Sports	40	60	100	3	4
PSHSIC303	Food psychology and Nutritional Counselling	40	60	100	3	4
PSHSIC304	Dietary Supplements and Functional Foods	40	60	100	3	4
PSHSICP301	Diet planning for resistance, power and team sports	-	50	50	4	2
PSHSICP302	Research Project	50	50	100	8	4
PSHSICP303	Internship (2 months)	-	50	50	*	2
	Total			600	24	24

***40 hours per week**

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSIC301	Nutrition for Resistance and Power Sports	3	100	4

Objectives:

1. To enable the students to understand the characteristics, physiology and body composition needs of different power/strength sports
2. To impart knowledge on sports specific nutrition and hydration guidelines- in power/strength, weight class-combat and racket sport athletes.
3. To help students understand the role of ergogenic aids- their dose, safety and efficacy to enhance sports performance.

Course Content		Periods
Unit I	Nutrition for strength sport athletes – Types and characteristics of strength or high intensity sports (sprinting, throwing, body building etc) – Physiology of energy systems, – Nutritional requirements- macronutrients- carbohydrates, fats proteins – Muscle building- post exercise anabolic window – Impact of resistance training on body composition of athletes in strength sports – Micronutrient requirements – Nutrient periodization in training and competition	15
Unit II	Nutrition for weight class sports- combat sports, individual events – Types and characteristics- physiological needs, body composition and energy systems used. – Macro and micronutrient requirements in training and competition. – Hydration guidelines in weight class sports – Making weight- weight loss and gain in training and competition- – Strategies to promote healthy weight loss in athletes	15
Unit III	Nutrition for racket sport athletes- badminton, squash, tennis 1. Characteristics- physiology, energy system, and body composition, duration of match, training. 2. Macro and micronutrient requirements in training and competition 3. Dietary and hydration strategies for athletes in different periods of training and competition Use of Nutritional supplements in strength/power sports- use, effects, efficacy and safety – Creatine monohydrate, Sodium bicarbonates, Nitrates – B-Alanine, Caffeine – Protein supplements – Fat burners	15

References:

1. Manore, M., Meyer, N. L., & Thompson, J. (2009). *Sport nutrition for health and performance*. Human Kinetics.
2. Ranchordas, M. K., Rogerson, D., Ruddock, A., Killer, S. C., & Winter, E. M. (2013). Nutrition for tennis: practical recommendations. *J Sports Sci Med*, 12(2), 211-24.
3. Jeukendrup, A., & Gleeson, M. (2010). *Sport nutrition: an introduction to energy production and performance* (No. Ed. 2). Human Kinetics.
4. Seebohar, B. (2011). *Nutrition periodization for athletes: Taking traditional sports nutrition to the next level*. Bull Publishing Company.
5. Slater, G., & Phillips, S. M. (2011). Nutrition guidelines for strength sports: sprinting, weightlifting, throwing events, and bodybuilding. *Journal of sports sciences*, 29(sup1), S67-S77.
6. Helms, E. R., Aragon, A. A., & Fitschen, P. J. (2014). Evidence-based recommendations for natural bodybuilding contest preparation: nutrition and supplementation. *Journal of the International Society of Sports Nutrition*, 11(1), 20.
7. McArdle, W. D., Katch, F. I., & Katch, V. L. (2009). *Sports and exercise nutrition*. Lippincott Williams & Wilkins.

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSIC302	Nutrition for Team Sports	3	100	4

Objectives:

1. To enable the students to understand the characteristics, physiology and body composition needs of team sports
2. To impart knowledge on sports specific nutrition and hydration guidelines- in team sports
3. To help students understand the role of ergogenic aids- their dose, safety and efficacy to enhance sports performance.

Course Content		Periods
Unit I	Classification and physiology of field and court sports -Type and characteristics of team sports- field and court sports -Physique, physiology, body composition and energy metabolism in team sports. Macronutrient needs of team sport athletes according to training and position on the field. -Carbohydrate intake- pre, during and post event/training. -Proteins and amino acids- type, amount and timing of ingestion -Fat requirements.	15
Unit II	Micronutrient requirements of team sport athletes -Role of vitamins and minerals in energy metabolism, blood formation, bone health, and antioxidants. -Fluid and electrolyte requirements-Hydration strategies in athletes based on rules of the sport, available time and opportunities to hydrate on the field.	15
Unit III	Practical nutrition guidelines for different team sport athletes -Field sports- hockey, football, rugby -Batting sports- cricket, baseball, softball -Court sports- volleyball, basketball, netball. -Indian team sports- kabaddi, kho-kho Use of Nutritional supplements in team sports -Creatine monohydrate -Protein supplements -Caffeine -Sports bars, drinks and gels	15

References:

1. Rankin J W, Nutrition for very high intensity sports in Sports Nutrition: A Practice manual for professionals edited by Marie Dunford 2006
2. Maughan, R. J., & Burke, L. M. (2012). Practical nutritional recommendations for the athlete. In *Sports Nutrition: More Than Just Calories-Triggers for Adaptation* (Vol. 69, pp. 131-150). Karger Publishers
3. Gibala, M. J. (2013). Nutritional strategies to support adaptation to high-intensity interval training in team sports. In *Nutritional Coaching Strategy to Modulate Training Efficiency* (Vol. 75, pp. 41-49). Karger Publishers.

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSIC303	Food psychology and Nutritional Counselling	3	100	4

Objectives:

1. To understand the driving factors of food selection that impact sports performance,
2. To develop counselling skills to help athletes and sports persons reach their optimum goal.

Course Content		Periods
Unit I	<p>The psychology of food choices, food Purchase and eating behavior</p> <ul style="list-style-type: none"> – Models of food choice – Biological & Genetic influences on energy and nutrient intake – Neurobiology of food intake <p>-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</p> <ul style="list-style-type: none"> – Influences of Media on food choice – Psychological stress among sports persons & its impact on food choices, consumption and performance – Food choices across the life span. Factors affecting purchase of food/supplements/ergogenic aids – Ethnic, religious and economic influences on food choices – Factors affecting the consumers healthy food choices 	15
Unit II	<p>Applications of food psychology for health maintenance and fitness</p> <ul style="list-style-type: none"> – Strategies to change dietary behavior – Optimisim and intention – Strategic automisation – Using stages of change model to change dietary behavior – Behavior modification strategies to influence food and nutrition choices – Theory of planned behavior and healthy eating – 	15
Unit III	<p>Nutritional Care Process and Counseling Strategies</p> <ul style="list-style-type: none"> – -Nutritional Care Process; Role and skills of a sport dietician. -Detailed study of Nutrition Counseling theories and strategies -Cognitive behavior therapy, Rational Emotive Behavioural Therapy – B: Stress management & Counselling; – Tools of psychological testing – Counseling of individual sports persons and teams 	15

References:

1. Robert S. Weinberg and Daniel Gould (2006) Foundations of Sport and Exercise Psychology
2. Arnold LeUnes (2011) Introducing Sport Psychology: A Practical Guide.
3. Mike Kane (2015) Sports Psychology: The Ultimate Guide For Mastering The Mental Aspects Of Sports Performance
4. Ellis Cashmore (2002) Sport and Exercise Psychology: The Key Concepts (Routledge Key Guides)

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSIC304	Dietary Supplements and Functional Foods	3	100	4

Objectives:

To enable students understand:

1. The need for dietary supplements for sports persons of various categories
2. The applications, guidelines and contra indications of using dietary supplements
3. The recent research in the herbal sports supplements for sports persons

Course Content		Periods
Unit I	<p>Anti-doping regulations and harmful effects of use of steroids & other banned substances</p> <p>Dietary Supplements: Regulations and Classification</p> <ul style="list-style-type: none"> – Definition and regulations OF Dietary Supplements (country-specific) – Classification of Dietary/Nutritional Supplements <p>Composition, Benefits and Applications of Nutritional Supplements</p> <p>Macronutrient Supplements:</p> <ul style="list-style-type: none"> – 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 – Carbohydrate supplements & EFAs, Glycerol – Meal replacement powders, Ready To Drink protein shakes (RTDs) – Sports drinks & Sports gels 	15
Unit II	<p>Micronutrient Supplements:</p> <ul style="list-style-type: none"> – Benefits/Mechanism of action and Applications – Vitamins: Ergogenic role of B-complex vitamins, Vitamin B12 & folic acid, Vitamin D supplements', Multi-vitamin supplements – Mineral supplements: Calcium-Magnesium-, Iron supplements, supplements, Electrolyte replacement drinks – Antioxidant vitamins & mineral supplements 	15
Unit III	<p>Benefits/Mechanism of action and Applications of Herbal Supplements</p> <ul style="list-style-type: none"> - Ergogenic Herbal supplements-:Ashwagandha, Rhodiola, Shilajit, Ginseng, Grape seed extract, - Herbal Testosterone-boosters (e.g. Tribulus terrestris, Nettle root, Long jack root etc) <p>Functional foods/phytochemicals</p> <ul style="list-style-type: none"> - Green tea extract, Tart cherries, Caffeine, Curcumin, Phytosterols, Flavonoids, Beta-alanine, L-Carnitine 	15

References:

1. Goldberg, I 1994. Functional Foods: Designer Foods, Pharma foods, Nutraceuticals Chapman & Hall
2. Gibson, GR and William, CM. 2000. Functional foods - Concept to Product. Woodhead publishing.
3. Aluko, R.E. (2012). Functional Foods and Nutraceuticals. Springer

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSICP301	Diet Planning for Resistance, Power and Team Sports	4	50	2

Objectives:

1. To enable students learn planning and cooking of diet for strength/power sports persons of various age groups and gender.
2. To train the students in conducting case studies on racket sports persons

Course Content		Periods
Unit I	Planning and preparation of diets for -Sprinting -Throwing -High jump and long jump -Gymnastics	15
Unit II	Planning and preparation of diets for Weight class sports -Boxing -Wrestling -Weightlifting -Body building Racket sport athletes -Badminton -Squash -Tennis/Table-tennis	15
Unit III	Planning and preparation of diets for team sports -Cricket -Hockey -Football -Kabbadi -Basketball	15

References:

1. Slater, G., & Phillips, S. M. (2011). Nutrition guidelines for strength sports: sprinting, weightlifting, throwing events, and bodybuilding. *Journal of sports sciences*, 29(sup1), S67-S77.
2. Helms, E. R., Aragon, A. A., & Fitschen, P. J. (2014). Evidence-based recommendations for natural bodybuilding contest preparation: nutrition and supplementation. *Journal of the International Society of Sports Nutrition*, 11(1), 20.
3. Maughan, R. J., & Burke, L. M. (2012). Practical nutritional recommendations for the athlete. In *Sports Nutrition: More Than Just Calories-Triggers for Adaptation* (Vol. 69, pp. 131-150). Karger Publishers
4. McArdle, W. D., Katch, F. I., & Katch, V. L. (2009). *Sports and exercise nutrition*. Lippincott Williams & Wilkins.
5. Jeukendrup, A., & Gleeson, M. (2010). *Sport nutrition: an introduction to energy production and performance* (No. Ed. 2). Human Kinetics.

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSICP302	Research Project	4	100	4

Objectives

1. To guide students in developing general research skills as well as research skills specific to their specialization.
2. To encourage students to work in conjunction with relevant industries, institutes, hospitals, ngo and schools.
3. To encourage students to adopt best practices in research.
4. To facilitate students in accomplishing the beginning steps of the research process, formulate and defend a research proposal, begin data collection, and write the first two chapters of the dissertation (Introduction and Review of Literature; Proposed Methodology).

Course Content		Periods
Unit I	Understanding tools for review of literature -Metanalysis and Literature review- differences -PubMed, Cochrane Databases, Research Gate, Google Scholar -RefWorks, Citethisforme, -Understanding various referencing styles AMA, Vancouver, APA (6 th Ed) -Plagiarism Check Softwares	15
Unit II	Review of Literature -Explore and finalize the area of interest for research with guidance from experts for feasibility, relevance and significance. -Refer national and international journals and other relevant literature like dissertations, thesis, books. -Contacting and communicating with experts (locally, nationally, and internationally) initially and periodically throughout the research process -Identifying possible focus areas with regard to one topic; specifying one such focus area (using relevant reading and communication with experts); writing research objectives/ questions/ hypotheses; conducting a thorough literature review; presenting a clear and convincing argument in support of the study; writing the first chapter of the dissertation, namely, the <i>Introduction and Review of Literature</i> , with due acknowledgement of source of ideas.	15
Unit III	Proposed Methodology -Specifying variables; defining variables (citing relevant literature) -Selecting an appropriate research design -Writing the second chapter of the dissertation, namely, the <i>Method</i> , with due acknowledgement of source of ideas; orally defending a research proposal; integrating feedback. -Obtaining consent from participants and relevant agencies/authorities; starting data collection; integrating changes if any; scheduling remaining data collection; starting data entry; revising the first two chapters of the dissertation.	15

* At the end of the term, students are required to submit a soft copy along with a spiral bound copy.

Course Code	Title	Duration	Marks	Credits
PSHSICP303	Internship	40 hours/ week for 2 months	50	2

Internship Protocol

- Students are required to take up an internship of minimum of 8 weeks with 40 hours per week in any sports association, sports organizations, with professional teams, college/school sports departments, conduct sports awareness programs, conduct nutrition education programs.
- At the end of internship students are required to submit a hard-bound report to the college.
- Internship will be graded by the supervisor at the place of internship.
- Alternatively, students can also take up an entrepreneurial activity or term paper of equal weightage as per the discretion of the department (subject to approval by the head of the department).

M.Sc. (HOME SCIENCE)
BRANCH-IC : SPORTS NUTRITION
SEMESTER-IV

(Revised w.e.f. June 2017)

Course Code	Title	Internal Assessment Marks	Semester End Exam	Total Marks	Periods/ Week/ Batch/ Division	Credits
PSHSIC401	Entrepreneurship	40	60	100	3	4
PSHSIC402	Nutrition for Sports person with Special Conditions	40	60	100	3	4
PSHSIC403	Sports and Fitness Management	40	60	100	3	4
PSHSIC404	Strategies for Holistic Health	40	60	100	3	4
PSHSICP401	Diet Planning for Sports person with Special Conditions	-	50	50	4	2
PSHSICP402	Research Project	50	50	100	8	4
PSHSICP403	Training in Alternative Strategies for Fitness	-	50	50	-	2
	Total			600	24	24

Course Code	Title	Periods/ Week/ Division	Marks	Credits
PSHSIC401	Entrepreneurship	3	100	4

Objectives:

1. To enable students learn to plan an entrepreneurial venture and executing the plan.
2. To assist students develop multi-management skills to either start their own business or manage an existing food service institution/ organization.

Course Content		Periods
Unit I	<p>Marketing and Marketing Management process</p> <ul style="list-style-type: none"> -Concepts of marketing -Channels of distribution -Market Research and Marketing strategies -Market segmentation, targeting and positioning -Novel and innovative product /service development -Brand development and promotion <p>Concepts of Human Resource Management</p> <ul style="list-style-type: none"> -Recruitment and selection -Training and development -Performance appraisal -Personnel action, retention and productivity improvement -Overview of Labour management and relations. -Supply Chain Management 	15
Unit II	<p>Entrepreneurship</p> <ul style="list-style-type: none"> -Definition and meaning of entrepreneurship -Types, Classification and trends of Entrepreneurial ventures in sports industries -Qualities and skills of an entrepreneur -Resources required for a business <p>-Project formulation, evaluation and feasibility analysis</p> <ul style="list-style-type: none"> -Idea generation -Market research -Project selection -Project evaluation using appropriate industry standards -Business planning -Importance, purpose and efficiency of a plan -Business acquisition, franchising and outsourcing -Legal, ethical and environmental considerations of the entrepreneurial venture -Overview of business regulation by the government -Inspection, Licensing -Patent, trademark and intellectual property rights registration and accreditations. 	15
Unit III	<p>Financial considerations of entrepreneurship</p> <p>Funding for the business proposal</p> <ul style="list-style-type: none"> – Government and non-government opportunities for funds and resources. – Franchising opportunities <p>Product pricing and profit generation</p> <ul style="list-style-type: none"> – Tools of analysis of costing, cost control and budgeting <p>Accounting procedures and financial statements.</p> <p>Investing resources into the business</p> <p>Corporate Social Responsibility</p>	15

References:

1. Kotler, P. (2003) Marketing management 11th ed. Pearson Education (Singapore) Pte. Ltd. Delhi.
2. Agarwal, T. (2007) Strategic human resource management Oxford University Press – New Delhi.
3. Aswathappa, K. (2005). Human resource and personnel management – Text and Cases Tata McGraw – Hill Publishing Co. Ltd. New Delhi.
4. Boyd, H.W., Walker, O.C. and Larreche, J. (1995) Marketing management – A strategic approach with a global orientation 2nd ed. Irwin Chicago.

5. Cartwright, R., Collins, M., Green, G. and Candy, A. (2001). The handbook for managing resources and information Infinity books, New Delhi.
6. Ivancevich, J.M., Donnelly, J.H. and Gibson, J.L. (1996). Management – principles and functions (4th ed.) All India Traveller Bookseller. Delhi.
7. Kale, N.G. (2003) Principles and practice of marketing. Vipul prakashan – Mumbai.
8. Rao, V.S.P. (2005) Human resource management – text and cases (2nd ed.) Excel Books. New Delhi.
9. Shookla, M.S. (2004). A handbook of human relations (with structured experiences and instruments). Macmillan India Ltd. Delhi.
10. Singh, P.N. (1998). Developing and managing human resources (3rd ed.) Suchandra Publications. Mumbai.

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSIC402	Nutrition for Sportsperson with Special Conditions	3	100	4

Objectives:

To enable students understand

1. Symptoms and Principles of nutritional management of various therapeutic conditions observed in sports persons
2. The importance and process of nutritional counseling for athletes.
3. The special nutritional concerns of travelling athlete and athletes with physical disabilities
4. Nutritional guidelines for athletes performing under altered climatic conditions.

Course Content		Periods
Unit I	Nutrition for child, adolescent and master athletes- -Process of growth and development during childhood and adolescence, Factors influencing with special emphasis of exercise -Physiology of ageing and factors influencing; -Nutritional problems of younger and master athletes -Nutritional guidelines and Nutritional Requirements for younger and older athletes. Nutritional concerns of travelling and vegan athletes Athletes performing under altered climatic conditions-High altitude, Mountaineers, High and low climatic temperature etc. Nutrition guidelines for athletes with physical disabilities	15
Unit II	Management of selected nutritional problems among sportsperson -Anaemia - causes, consequences and role of nutrition in the prevention and management -Osteoporosis - Bone Physiology, Effect of Nutrition, age, sex and exercise on bone health, Preventive and curative strategies of osteoporosis Nutritional management of Exercise Injuries Nutrition for Weight Management in Sports and Non-Sports Persons of Various Age Groups / Categories. -Eating Disorders among sports persons, Types of Sports with weight restrictions -Need for Weight Loss & weight gain, Negative aspects of weight loss and recovery strategies -Dietary & Lifestyle Approaches for weight and fat loss and/gain	15
Unit III	Nutritional Management of clinical conditions among sports – -Diabetes Mellitus - Etiology, Pathophysiology, metabolic alterations, Complications, Assessment and Management. -Hypertension and Heart disease -Prevalence, Pathophysiology, Role of Macro & Micronutrients. -Gastro Intestinal Disorders: Peptic Ulcer, GERD, IBS, etc., Etiology, Pathophysiology and effect of Exercise	15

References:

1. Bernadot, Dan (1999) Nutrition for serious Athletes, Human Kinetics USA.
2. Browns, Fred and Caustan, Cargill (2002) Essentials of Sports Nutrition – 2nd edition John Wiley and Sons,
3. Burke, L. Y.and Deking, V. (2006) Clinical Sports Nutrition (3rd ed.), Tata McGraw Hill Pub. England.
4. Summerfield, Lianne, M. (2001) Nutrition Exercise and Behaviour An integrated approach to weight
5. Wolinsky, I. (1998) Nutrition in Exercise and Sports CRC press NY.
6. Wolinsky, Ira and Driskell, J. (2004) Nutritional Ergogenic aids, CRC Press NY. management, Belmont (USA). Wadsworth/Thompson Learning

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSIC403	Sports and Fitness Management	3	100	4

Objectives:

1. To understand the concepts of Sports and Fitness Management.
2. To learn the skills necessary for managing a sports event/ fitness center/sports organization.

Course Content		Periods
Unit I	<p>Sports Organization & Administration</p> <ul style="list-style-type: none"> – Perspective and Management; Principles of Management – Sports Human Resource Management- Group and Teams : Meaning of a Group, Group Dynamics, Group Cohesiveness, Types of Groups, Task Groups, Work Teams, Nature of Teams, Team Building, Group/Teams Effectiveness, How to Make Teams More Effective. – Organisation Structure as Applied to Sports Organizations – Decision Making Process: Individual Decision Making, Rational Decision Making, Decision making Styles, Creativity in Decision Making, Participative Decision Making, Group decision Making – Conflict: Definition of Conflict, Stages in Conflict Process , Functional Conflict, Dysfunctional Conflict, Managing Conflict, Negotiation – Leadership in Sports Management -High Performance Leadership in Sports - Improving Leadership Effectiveness – Managing For High Performance: High Performance Work Practices, Goal Setting, Performance Management Techniques Associated with Goal Setting, Application of Goal Setting to Organisational Performance – Marketing Management 	15
Unit II	<p>Financial Accounting & Management</p> <ul style="list-style-type: none"> – Sports Law, Legal Aspects of Business & Taxation – Business Statistics – Sports Financial Management <p>Strategic Management</p> <ul style="list-style-type: none"> – Product & Brand Management – Sports Marketing Tools – Sports Analytics Management- Software – Sports Sponsorships & Funding for setting up a gym – Business Negotiations Skills 	15
Unit III	<ul style="list-style-type: none"> – Management of Sporting and Recreation, Organisation, Decision process, Delivery of Recreation Services, Impact of Organisational Process on Individual <p>Sports Facility & Event Management</p> <ul style="list-style-type: none"> – Celebrity Management – Digital Marketing in Sports – Media Marketing in Sports – Public Relations in Sports – Business Communication 	15

References:

- Gil Fried (2015) Managing Sport Facilities
Janet B. Parks and Beverly R.K. Zanger (1990) Sport and Fitness Management: Career Strategies and Professional Content
John Beech and Dr Simon Chadwick (2013) The Business of Sport Management
Karen Bill (2009) Sport Management (Active Learning in Sports)
Fred Luthans - Organizational Behaviour : McGraw Hill International
S P Robins - Organizational Behaviour : Prentice Hall India Ltd.
Ghanekar - Organizational Behaviour Concept & Cases : EPH

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSIC404	Strategies for Holistic Health	3	100	4

Objectives:

1. To understand the relevance and applications of holistic health and fitness strategies in various sports.
2. To study about alternative strategies to achieve fitness, create wellness and reduce stress with integration of the mind, emotions and the body.
3. To explore with a scientific temper, the recent strategies developed to attain optimum body composition.

Course Content		Periods
Unit I	Maintaining holistic health and wellness-Sports Specific Strategies. <ul style="list-style-type: none"> – Athletics – Swimming – Skiing – Skating-floor and ice – Gymnastics – Wrestling – Boxing – Body building – Team sports-Baseball, Basketball, Football, Hockey, – Car racing – Mountaineering – Boating – Rafting 	15
Unit II	Alternative strategies to achieve fitness, create wellness and manage/reduce stress with integration of the mind, emotions and the body. <ul style="list-style-type: none"> – Yoga and meditation – Ayurvedic concepts for wellness – Dance- Traditional and contemporary – Outdoors activities and nature bathing – Energy healing techniques – Psychological and behavioural strategies-, Neuro Linguistic Programming, Emotional Freedom Technique, Hypnotherapy – Naturotherapy – Aromatherapy – Massage therapy, Bowen Therapy – Accupuncture and acupressure – Music therapy – Laughter Therapy. – Role of sleep in health maintenance and designing an adequate sleep prescription for health 	15
Unit III	Scientific study of the recent strategies developed to attain optimum body composition. <ul style="list-style-type: none"> – Mindful eating and behavioural therapy – Specific diets designed for altering body composition (Fad Diets) – Cryogenic freezing – Body Sculpting – Herbal remedies and phytonutrients for weight loss – Ultra-Liposuction 	15

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Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSICP401	Diet Planning for Sportsperson with Special Conditions	4	50	2

Objectives:

1. To enable students to plan diets for younger and older athletes
2. To enable students to plan nutritious meals for travelling athlete, Vegan athlete and athletes with physical disabilities
3. To enable students learn and implement principles of diet planning in the management of- Selected Nutritional problems-Anemia and osteoporosis; Clinical conditions- Weight management, Diabetes and Gastro intestinal diseases

Course Content		Periods
Unit I	Planning and preparation of diets for -Younger and older athletes of various categories-Age groups, gender and sports types -Travelling athlete -Vegan athlete -Athletes with physical disabilities/Paraplegic athletes/Injured Athletes -Master/Older Athletes	15
Unit II	Planning and preparation of diets for -Athletes performing under altered climatic conditions -High altitude -Mountaineers -High and low climatic temperatures	15
Unit III	Planning and preparation of diets for sports persons suffering from -Anemia and osteoporosis-Development of micronutrient rich recipes and sports drinks Weight management in sports persons- weight loss & weight gain Planning and preparation of diets for -Diabetes mellitus -Hypertension, atherosclerosis -Gastro intestinal diseases-Peptic Ulcer, GI disturbance due to anxiety, Celiac disease, IBS	15

References:

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Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSICP402	Training in Alternative Strategies for Fitness	4	50	2

Objectives:

1. To provide practical training to develop expertise in using exercises to achieve fitness.
2. To enable students to explore and experience alternative strategies for wellness.
3. To learn to develop nutrition and wellness education protocols for the community.
4. To have students learn about alternative health strategies and therapies through engagement in participatory workshops.

Units	Contents	Periods
Unit I	<p>Gym based aerobic exercises/Gym based resistance training/ Exercises for flexibility/ Calisthenics/ Dance- Traditional, contemporary and applied/ Yoga, Power yoga and meditation/ Other Forms of Fitness</p> <p>Organising and participating in workshops that teach Eastern alternative health strategies and therapies such as the following:</p> <ul style="list-style-type: none"> • Yoga • Mindfulness and meditation • Ayurveda • Energy healing • Laughter therapy • Acupuncture / acupressure 	15
Unit II	<p>Organising and participating in workshops that teach Western alternative health strategies and therapies such as the following:</p> <ul style="list-style-type: none"> • Music therapy • Dance therapy • Art-based therapy • Nature therapy • Hypnotherapy • NLP 	15

Course Code	Title	Periods/Week/Division	Marks	Credits
PSHSICP403	Research Project	4	100	4

Objectives:

1. To encourage students to work in conjunction with relevant industries, institutes, hospitals, schools, etc.
2. To assist students in developing general research skills as well as research skills specific to their specialization.
3. To encourage students to adopt best practices in research.
4. To facilitate students in completing laboratory work/product development/data collection/data entry/data analysis, and writing the remaining three chapters of the dissertation (Results, Discussion, Summary).
5. To support students to complete and submit the dissertation for the viva voce examination, integrate feedback, submit the final copy of the dissertation, and write a research paper using the findings of their research.

Course Content		Periods
Unit I	<p>Completing Laboratory Work/Product Development/ Data Collection Completing Data Entry and Preliminary Analyses -Entering all data; checking for data entry errors; running preliminary analyses.</p> <p>Analyzing Data and Reporting Results -Analyzing data; interpreting findings; reporting results in figures/tables and text using scientific protocol; writing the third chapter of the dissertation, namely, the <i>Results</i>, by research objectives/ questions/hypotheses; orally presenting the results and integrating feedback.</p>	15
Unit II	<p>Discussing Findings and Write Results and Discussions Corroborating own findings with those in previous research and theory -Explaining findings using relevant literature and communication with experts -Discussing implications of findings for practice/ industry/family/society Suggesting recommendations for future research; writing the fourth chapter of the dissertation, namely, the <i>Discussion</i>, using appropriate scientific protocol</p>	15
Unit III	<p>Summarizing Findings and Completing the Writing of the Dissertation Writing the fifth chapter of the dissertation, namely, the <i>Summary</i>; writing the abstract; revising previous chapters as necessary; completing all other relevant work for the dissertation (e.g., reference list, appendices, table of contents, and list of figures/tables); submitting the dissertation for the viva voce examination.</p> <p>Submission and Oral Defense; Writing of the Research Paper Orally defending the dissertation; integrating feedback into the final document; submitting the completed dissertation (hard copy and soft copy). Using the dissertation to write a research paper; submitting the research paper (hard copy and soft copy)/ Present the findings at Avishkar/Indian Science Congress or any other Conference</p>	15

* At the end of the term, students are required to submit a soft copy and hard bound copy to the library.

* In addition to this, students are encouraged to publish research papers as an outcome of the study as per the discretion of the guide/co-guide. All publications must bear the name of the college i.e. College of Home Science, Nirmala Niketan, University of Mumbai.

* All publications will bear name of the student and guide along with co-guides/experts if applicable.

Examination Scheme for MSc Home Science:

Part A: Theory Papers

All theory papers of 100 marks are to be evaluated in two parts.

INTERNALS: 40 marks. This comprises 30 marks for a project, 5 marks for class participation, and 5 marks for the extent to which the student was a responsible learner. See Table below:

<ul style="list-style-type: none">• One seminar presentation based on the curriculum in the college, assessed by the teacher of the institution teaching PG learners / Publication of a research paper/ Presentation of a research paper in seminar or conference. A. Selection of the topic, introduction, write up, references- 15 marks. B. Presentation with the use of ICT- 15 marks.• Other exercises of equal weightage can also constitute the project: For example, conducting interviews or assessments based on the topics in the curriculum; or reflective writing exercises on topics relevant to the curriculum; or product designing.	30 Marks
<ul style="list-style-type: none">• Active participation in routine class instructional deliveries	05 Marks
<ul style="list-style-type: none">• Overall conduct as a responsible learner, communication and leadership qualities in organizing related academic activities	05 Marks

SEMESTER-END EXAMINATION: 60 marks. The semester-end question paper is for 2 ½ hours. The semester-end examination question paper has to be set with limited choice within each set of questions.

For all four unit syllabi, the question paper must have five sets of questions of 12 marks each; each of the five questions is compulsory, with options within each question:

- Question 1, carrying 12 marks, has a set of sub-questions from Unit I. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 4 out of 6.
- Question 2, carrying 12 marks, has a set of sub-questions from Unit II. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 4 out of 6.
- Question 3, carrying 12 marks, has a set of sub-questions from Unit III. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 4 out of 6. (Format may be modified for a lengthier statistics sum.)
- Question 4, carrying 12 marks, has a set of sub-questions from Unit IV. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 4 out of 6. (Format may be modified for a lengthier statistics sum.)
- Question 5, carrying 12 marks, has a set of sub-questions from Units I, II, III, and IV. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 4 out of 6.

	Total Marks/ Duration	Internal Assessment	Semester End Exams	Pattern
Theory Papers	100 marks/ 2 and ½ hours	40	60	Q 1.(12 marks)- Unit 1 Q 2.(12 marks)- Unit 2 Q 3.(12 marks)- Unit 3 Q 4.(12 marks)- Unit 4 Q 5.(12 marks)- Units 1, 2, 3, 4, & 5

For all three unit syllabi, the question paper must have four sets of questions of 15 marks each; each of the four questions is compulsory, with options within each question:

- Question 1, carrying 15 marks, has a set of sub-questions from Unit I. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 5 out of 8.
- Question 2, carrying 15 marks, has a set of sub-questions from Unit II. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 5 out of 8. (Format may be modified for a lengthier statistics sum.)
- Question 3, carrying 15 marks, has a set of sub-questions from Unit III. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 5 out of 8. (Format may be modified for a lengthier statistics sum.)
- Question 4, carrying 15 marks, has a set of sub-questions from Units I, II, & III. Possible sub-questions include the following formats: Answer any 2 sub-questions out of 3, or any 3 out of 5, or any 5 out of 8.

	Total Marks/ Duration	Internal Assessment	Semester End Exams	Pattern
Theory Papers	100 marks/ 2 ½ hours	40	60	Q 1.(15 marks)- Unit 1 Q 2.(15 marks)- Unit 2 Q 3.(15 marks)- Unit 3 Q 4.(15 marks)- Units 1, 2 and 3

Part B: Practical Papers

Each Practical Paper of 50 marks will be evaluated in a semester-end examination of 50 marks. There are no internal marks for these practical papers. The semester-end examination is of 3 ½ hours.

	Total Marks/ Duration	Internal Assessment	Semester End Exams	Pattern
Practical Paper	50 marks/ 3 ½ hours	-	50	-

Dissertation carries 100 marks in each of Semesters III and IV. Of these 100 marks, 50 marks are to be scored by the guide (25 marks for execution of the project/process & 25 marks for the final outcome of the project), and 50 marks by the referee(s) on the day of the viva-voce examination (25 marks for the written submission & 25 marks for the viva).