University of Mumbai

No. AAMS_UGS/ICC/2024-25/31

CIRCULAR:-

All the Principals of the Affiliated Colleges, Directors of the Recognized Institutions and the Head, University Departments is invited to this office Circular No. AAMS_UGS/ICC/2023-24/23 dated 08th September, 2023 relating to the NEP UG & PG Syllabus.

They are hereby informed that the recommendations made by the Ad-hoc Board of Studies in Home Science at its online meeting held on 16th March, 2024 and subsequently passed by the Board of Deans at its meeting held on 18th April, 2024 **vide** item No. 8.20 (N) have been accepted by the Academic Council at its meeting held on 20th April, 2024 **vide** item No. 8.20 (N) and that in accordance therewith to introduce syllabus for **M.Sc. (Home Science – Sports Nutrition) Sem – II** and correction in **Sem – I** syllabus as per appendix (NEP 2020) with effect from the academic year 2024-25.

(The said circular is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
02nd August, 2024

(Prof. (Dr.) Baliram Gaikwad)
I/c. REGISTRAR

To,

All the Principals of the Affiliated Colleges, Directors of the Recognized Institutions and the Head University Departments.

A.C/8.20 (N)/20/04/2024

Copy forwarded with Compliments for information to:-

1) The Chairman, Board of Deans,
2) The Dean, Faculty of Science & Technology,
3) The Chairman, **Ad-hoc Board of Studies in Home Science**,
4) The Director, Board of Examinations and Evaluation,
5) The Director, Department of Students Development,
6) The Director, Department of Information & Communication Technology,
7) The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari.

Copy forwarded for information and necessary action to :-	
1	The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Dept)(AEM), dr@eligi.mu.ac.in
2	The Deputy Registrar, Result unit, Vidyanagari drresults@exam.mu.ac.in
3	The Deputy Registrar, Marks and Certificate Unit,. Vidyanagari dr.verification@mu.ac.in
4	The Deputy Registrar, Appointment Unit, Vidyanagari dr.appointment@exam.mu.ac.in
5	The Deputy Registrar, CAP Unit, Vidyanagari cap.exam@mu.ac.in
6	The Deputy Registrar, College Affiliations & Development Department (CAD), deputyregistrar.uni@gmail.com
7	The Deputy Registrar, PRO, Fort, (Publication Section), Pro@mu.ac.in
8	The Deputy Registrar, Executive Authorities Section (EA) eau120@fort.mu.ac.in He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
9	The Deputy Registrar, Research Administration & Promotion Cell (RAPC), rapc@mu.ac.in
10	The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA) dy.registrar.tau.fort.mu.ac.in ar.tau@fort.mu.ac.in
11	The Deputy Registrar, College Teachers Approval Unit (CTA), concolsection@gmail.com
12	The Deputy Registrars, Finance & Accounts Section, fort draccounts@fort.mu.ac.in
13	The Deputy Registrar, Election Section, Fort drelection@election.mu.ac.in
14	The Assistant Registrar, Administrative Sub-Campus Thane, thanesubcampus@mu.ac.in
15	The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan, ar.seask@mu.ac.in
16	The Assistant Registrar, Ratnagiri Sub-centre, Ratnagiri, ratnagirisubcentar@gmail.com

Copy for information :-	
1	P.A to Hon'ble Vice-Chancellor, vice-chancellor@mu.ac.in
2	P.A to Pro-Vice-Chancellor pvc@fort.mu.ac.in
3	P.A to Registrar, registrar@fort.mu.ac.in
4	P.A to all Deans of all Faculties
5	P.A to Finance & Account Officers, (F & A.O), camu@accounts.mu.ac.in

AC –20/04/204
Item No. –8.20

As Per NEP 2020

University of Mumbai

Title of the program

A- P.G. Diploma in Home Science – Sports Nutrition
B- M.Sc. (Home Science – Sports Nutrition) (Two Years)

2023 - 24

C- M.Sc. (Home Science – Sports Nutrition) (One Year)

2027 - 28

Syllabus for
Semester – I & II
Ref: GR dated 16th May, 2023 for Credit Structure of P.G.

University of Mumbai

(As per NEP 2020)

Sr. No.	Heading	Particulars	
1	**Title of program** **O:_____A**	**P.G. Diploma in Home Science – Sports Nutrition**	
	O:_____B	**M.Sc. (Home Science – Sports Nutrition) (TwoYears)**	
	O:_____C	**M.Sc. (Home Science – Sports Nutrition) (OneYear)**	
2	**Eligibility** **O: _____**	**A**	For being eligible for admission, a learner musthave passed: • B.Sc. Home Science with specialization in Foods, Nutrition and Dietetics or its equivalent. OR • B.Sc. with Foods and Nutrition/ Foods,
			Nutrition and Dietetics/Food Technology or its
			equivalent.
			OR •B.Sc. General/Composite Home ScienceOR • B.Sc. Home Science in any other Specialization OR • B.Sc. Microbiology/Biochemistry/ Life Sciences/Chemistry/Biotechnology/Biological Sciences as a major or part fulfilment. OR •B.Sc. Home Economics OR • B.Sc. Human Ecology
			OR • B.Sc. Family and Community SciencesOR • B.Sc. /B.A. in Human Sciences OR • B.Sc. Nursing or an equivalent Nursing Degree of another recognized University.OR
			• B.Sc. Pharmacology OR • B.Pt. (Bachelor of Physiotherapy)OR • Medical Graduates in any discipline (MBBS/BAMS/BHMS/BDS)

			OR • B.Tech Food Technology OR • B.Voc Home Science/ Foods, Nutrition and Dietetics/Foods and Nutrition/Food Processingand Technology or its equivalent. OR • B.Sc. Catering and Hotel Management or its equivalent. OR • Physical or fitness trainers certified by an accredited institution provided they have completed their graduation in any discipline.OR • A graduate degree which includes at least fourof the following subjects in the undergraduate programmes- Basic Nutrition, Biochemistry, Physiology, Food Science, Food processing/Food Preservation, Dietetics, Community Nutrition/Public Health Nutrition
		B	For being eligible for admission, a learner must have passed: • B.Sc. Home Science with specialization in Foods, Nutrition and Dietetics or its equivalent. OR • B.Sc. with Foods and Nutrition/ Foods,
			Nutrition and Dietetics/Food Technology or its
			equivalent.
			OR • B.Sc. General/Composite Home ScienceOR • B.Sc. Home Science in any other Specialization OR • B.Sc. Microbiology/Biochemistry/ Life Sciences/Chemistry/Biotechnology/Biological Sciences as a major or part fulfilment. OR • B.Sc. Home Economics OR • B.Sc. Human Ecology
			OR • B.Sc. Family and Community SciencesOR • B.Sc. /B.A. in Human Sciences OR • B.Sc. Nursing or an equivalent Nursing Degree of another recognized University.OR
			• B.Sc. Pharmacology OR • B.Pt. (Bachelor of Physiotherapy)OR

			● Medical Graduates in any discipline (MBBS/BAMS/BHMS/BDS) OR ● B.Tech Food Technology OR ● B.Voc Home Science/ Foods, Nutrition and Dietetics/Foods and Nutrition/Food Processingand Technology or its equivalent. OR ● B.Sc. Catering and Hotel Management or its equivalent. OR ● Physical or fitness trainers certified by an accredited institution provided they have completed their graduation in any discipline.OR ● A graduate degree which includes at least fourof the following subjects in the undergraduate programmes- Basic Nutrition, Biochemistry, Physiology, Food Science, Food processing/Food Preservation, Dietetics, Community Nutrition/Public Health Nutrition
		C	Graduate with 4-year U.G. Degree (Honours / Honours with Research) with specialization in the concerned subject or equivalent academic level 6.0. **OR** A graduate with four years UG Degree program with maximum credits required for the award of Minor degree can take up the Postgraduate program in Minor subject provided the student has acquired the required number of credits as prescribed by the concerned Board of Studies.
3	**Duration of programR:**	**A**	1 Year
		B	2 Years
		C	1 Year

4	**R:_____Intake Capacity**	20	
5	**R:_____Scheme of Examination**	NEP 50% Internal 50% External, Semester End Examination Individual Passing in Internal and External Examination	
6	**Standards of Passing** **R: _____**	40%	
7	**Credit Structure** **R: _____**	Attached herewith	
8	**Semesters**	**A**	Sem. I & II
		B	Sem. I, II, III & IV
		C	Sem. I & II
9	**Program Academic Level**	**A**	6.0
		B	6.5
		C	6.5
10	**Pattern**	Semester	
11	**Status**	New	
12	**To be implemented from the Academic Year Progressively**	A	From Academic Year: 2023 – 2024
		B	
		C	From Academic Year: 2027 – 2028

Sign of Head of the Institute

Name of the Head of the Institute with Designation
Prof. Dr. Vishaka Ashish Karnad
I/C Principal &
Chairperson Board of Studies
Home Science

Sign of Dean

Name of the Dean

Name of the Faculty

Name of Department
Foods, Nutrition and Dietetics

Preamble

1) INTRODUCTION

In the 1970s, the understanding of the interrelationships between diets and incidence and progression of chronic degenerative disease increased globally along with the realisation that nutrition and lifestyle can impact the long-term health of the nation. It was then that the college of Home Science instituted the department of Foods and Nutrition in 1972 and started the M.Sc. programme in Foods and Nutrition which was later expanded to a M.Sc. in Foods, Nutrition and Dietetics. The postgraduates of this programme are skilled in all arms of the subject and find employability in positions in the food industry, clinical nutrition and public health nutrition.

It was in the 1980s that exercise physiologists worked on the role of nutrition primarily for improved performance of endurance sports and in the 1990s and 2000s, the scope of nutrition in resistance sports and other sports for bettered performance was studied. Keeping the necessity of the changing times and for addressing the need for nutritional guidance for sportspersons in India and to support our sportspersons' performance, the M.Sc. programme in Sports nutrition was started in 2010.

In the current times, the field of Sports Nutrition has increased in its scope with the advent of specialised branches and its effect on optimising performance in sports. Whilst genetic advantages, and the training and efforts put in will impact performance, the role of correct nutrition during training as well as pre and post-game and in between matches can be the game changers between a win and a loss. The nutritional requirements change with the type of sports – from endurance to team sports to resistance and power sports. The nutritional requirements are different for sportspersons of different age groups and those need to be addressed.

Over the last two years, India has made significant strides in the international sports arena, showcasing its prowess and determination across a wide range of disciplines. Cricket has been a sport India excels in and in the current times we have expanded our achievements in many other sports. In 2021, Olympic glory was achieved where India recorded its best-ever medal haul at the Olympics, securing a total of 7 medals, including 1 gold, 2 silver, and 4 bronze medals. The historic gold in javelin throw captured the nation's attention while successes in wrestling, badminton, and weightlifting highlighted India's diverse sporting talents.

India's achievements over the last two years serve as a foundation for future growth in the international sports arena. The government's focus on the Fit India movement, increased investment in sports infrastructure, and emphasis on grooming young talents can contribute to a more robust and diverse sporting landscape. This when combined with the power of nutrition as a fuel to optimise performance can catapult India into the big league of sports achievements.

It is with this background that the M.Sc. in Sports Nutrition has been restructured as per the guidelines and the goals of the National Education Policy 2020. This programme is designed to create sports nutrition professionals who are intensely trained to attain proficiency in advanced and specialised subjects in the field of sports nutrition. It offers a deep understanding of how nutrition needs to be designed for different kinds of sports with both theoretical and practical inputs. Today, with the huge number of sports options available like endurance sports, power sports, team sports and resistance sports with each one of them having specific requirements there arises a need to train more sports nutritionists in the newest aspects of sports nutrition.

The mandatory course work includes concepts of exercise physiology, kinesiology, biochemistry, nutritional and fitness assessment will help the students to acquire a strong foundation in sports nutrition and be able to efficiently practice it in the field.

The elective courses have been designed to provide an opportunity to train learners in the contemporary aspects of sports nutrition. It will give them an opportunity to look at fitness management in a multi-faceted manner and use complementary health strategies to manage their

client. The electives also include entrepreneurship and innovation as a focus as well as there is emphasis placed on the use of technology in sports nutrition.

The course in research methods and statistics will enable the students to interpret recent advances in sports nutritional science and provide them with skills for designing and conducting research.

This is a programme designed to create professionals competent in managing nutrition of sportspersons and to take the nation's sports to a higher, more evolved level. It will lead to the sports nutritionist serving as a cornerstone for the holistic development of sportspersons, ensuring athlete wellbeing and enhancing sports performance. As the sports landscape continues to evolve, the significance of sports nutrition professionals remains paramount in realising the full potential of the sportspersons.

2. Aims and Objectives:

a. To equip students with the knowledge of food components essential in the sports industry for fitness and good body composition.
b. To impart to the students a systematic approach to basic and applied aspects of fitness nutrition and optimum body composition using a multi-disciplinary approach.
c. To familiarize students with the various theoretical and practical aspects of the nutritional requirements of sports nutrition based on the type of sport.
d. To encourage students to work in conjunction with relevant sports industry to get a deep insight into the subjects of sports and fitness.
e. To help the students build their research competencies and be able to use the research in the field of sports nutrition.
f. To foster an entrepreneurial mindset in students in the sports industry, enabling them to identify and seize opportunities within the industry, develop innovative coaching programmes and create sustainable ventures in the field.

3. Programme /Learning Outcomes

The program encompasses a comprehensive range of skills and knowledge, values and mind-set, enabling graduates to excel in the multifaceted field of Sports Nutrition. On successful completion of the program, student will be able to be a competent and valuable member of the fraternity as outlined below:

Programme Outcome (PO)	Definition	Graduate Attribute
	On completion of the programme, the learner will be able to	
PO1	Demonstrate an in-depth knowledge and understanding of core fundamentals of concepts of Sports Nutrition, Fitness Nutrition and Public Health with the integration of all allied subjects required to professionally practice in the area of Sports Nutrition competently	Disciplinary Knowledge
PO2	Effectively develop nutritious and sustainable food products, communicate fitness diets, counsel athletes effectively and explain complex nutritional concepts in simple and understandable terms both orally and in writing to fellow professionals as well as the community	Communication Skills

PO3	Have a capacity to derive efficient methods of meal plans based on the type of the sport and individual and evaluate the modes of nutritional therapies as well as programmes to betterhealth in the sports community.	Critical Thinking
PO4	Creatively construct Dietary, Nutritional and Lifestyle strategies to preserve fitness in health, manage stress, addressnutrition related health issues in the sports community, to support the sports industry as a knowledge partner in formulation of healthy food products; and to engage in entrepreneurial initiatives to solve individual and health problems of persons in the sports community	Problem Solving Innovation Entrepreneurial skills
PO5	Competently evaluate traditional as well as recent nutrition practices in relation to evidence-based nutrition and draw applicable conclusions, using a scientific and open mind withthe vision of bettering food and nutrition practice in the sports industry.	Analytical and Scientific Reasoning
PO6	Competently explore the cause and effect relationships of food, nutrition and lifestyles on optimum body composition and to construct and follow through a research problem using research techniques and statistical analysis, thus drawing up adequate conclusions for applications of research in the sportsindustry, community and clinical setups as employee or entrepreneur.	Research related skills
PO7	Successfully work in teams and cooperate and derive meaningful beneficial conclusions for health food requirements through interdisciplinary and collaborativeefforts in the community, research, industry and sports organizational set-ups	Cooperation/Team work
PO8	Envision a drive to translate research, recent innovations and personal and professional experiences into applications to benefit sports industry, management of their fitness nutrition and entrepreneurial ventures with self-awareness and introspection	Reflective Thinking
PO9	Use technology for sports foods, nutrition and consumer information, diet planning, nutrition education as well as be aware of using digitization for entrepreneurial ventures with special emphasis in the sports industry.	Information/digital literacy
PO10	Work independently, identify appropriate resources for aproject and manage a project to its fruitful and timely completion	Self-Directed Learning
PO11	Be adept with regard to use of national and global multi- cultural aspects of the foods and nutrition requirements of sports person depending upon the type of sport played, thus being able to deliver products and nutrition and lifestyle	Multi-cultural competence

	strategies for health of the individual and the sportscommunity.	
PO12	Practice principles of holistic health, in the most sustainable and effective manner; placing consumer, community and fraternity well-being at the center of operations and refrain from unethical behavior at the workplace.	Moral and Ethical awareness and reasoning
PO13	Take on leadership positions formulating and sharing an inspiring vision and the eagerness to bring productive and sustainable positive results for our sports professionals and the entire sports fraternity using organizational, entrepreneurial and managerial skills	Leadership readiness/qualities
PO14	Continue lifelong learning and be updated with cutting edge knowledge and practices in the sports field and the understanding that ongoing learning has to be a personal and professional way of life; thus, being continuously involved inevolving, up scaling, reinventing and reskilling to the requirements of the times	Lifelong learning

4) Any other point (if any)

5) CREDIT STRUCTURE OF THE PROGRAMME (SEMESTER – I)
(Table as per Parishishta 1 with sign of HOD and Dean)

R_____

Post Graduate Programmes in University

- **P.G. Diploma in Home Science – Sports Nutrition**
- **M.Sc. (Home Science – Sports Nutrition) Year I (Two-Years)**

Parishishta – 1

Year (2 YrPG)	**Level**	**Sem** (2 Yr)	**Major**		**RM**	**OJT/FP**	**RP**	**Cum Cr.**	**Degree**
			Mandatory*	**Electives (Anyone)**					
I	**6.0**	**Sem I**	**SN01C1** Human Physiology and Kinesiology Theory (4Cr)	**SN01C5E1A** ComprehensiveHealth Management Theory (2 Cr) **SN01C5E1BP** ComprehensiveHealth Management Practical (2 Cr) **OR** **SN01C5E2A** Strategies for Sustained Fitness for Children andElderly Theory (2 Cr) **SN01C5E2BP** Strategies for Sustained Fitness for Children andElderly Practical (2 Cr)	**SN01C6** Research Methods in Home Science (4 Cr)			2	**PG Diploma (after 3Year Degree)**
			SN01C2 Advances in Nutritional and Exercise Biochemistry Theory (4 Cr)						
			SN01C3A Principles of Nutritional Assessment Theory (2 Cr) **SN01C3BP** Exercise Physiology and Fitness Assessment Practical (2 Cr)						
			SN01C4 Descriptive Statistics in Home Science Theory (2 Cr)						
Sem – I For P.G. Diploma & M.Sc. Year I (Two-Years)			**14**	**4**	**4**	**-**	**-**	**22**	

Note: *Curriculum will be enriched by extension work and educational trips for experientiallearning with supplemental credits.
A MOOC course on SWAYAM/ NPTEL/COURSERA can be completed with supplemental credits.

CREDIT STRUCTURE OF THE PROGRAMME (SEMESTER – II)

(Table as per Parishishta 1 with sign of HOD and Dean)

R_____

Post Graduate Programme in University

- **P.G. Diploma in Home Science – Sports Nutrition**
- **M.Sc. (Home Science – Sports Nutrition) (Two Years)**

Parishishta – 1

Exit option: PG Diploma (44 Credits) after Three Year UG Degree									
Year (2 Yr PG)	**Level**	**Sem.** (2 Yr)	**Major**		**RM**	**OJT/FP**	**RP**	**Cum. Cr.**	**Degree**
			Mandatory*	**Electives (Any one)**					
I	**6.0**	**Sem-II**	**SN02C1** Nutrition Across the Life Cycle Theory (4 Cr) **SN02C2A** Nutrition for Endurance Sports Theory (2 Cr) **SN02C2BP** Diet Planningfor Endurance Sports Practical (2 Cr) **SN02C3** Dietary Supplements, Functional Foods and Ergogenic Aids Theory (4 Cr) **SN02C4** Advanced Statistics in Home Science Theory (2 Cr)	**SN02C5E1A** Sports and Fitness BasedProduct Development Theory (2 Cr) **SN02C5E1BP** Sports and Fitness Based Product Development Practical (2 Cr) **OR** **SN02C5E2A** Personal Training and Rehabilitation-Insights and Opportunities Theory (2 Cr) **SN02C5E2BP** Personal Training and Rehabilitation-Insights and Opportunities Practical (2 Cr)	-	**SN02 C6** On the Job training (4 Cr)	-	22	**PG Diploma (after 3 Year Degree)**
Sem – II For P.G. Diploma & M.Sc. Year I (Two-Years)			**14**	**4**	**-**	**4**	**-**	**22**	
Cum. Cr. (For P.G. Diploma)			**28**	**8**	**4**	**4**	**-**	**44**	

Note: Curriculum will be enriched by Extension Work and Educational Trips for Experiential learningwith supplemental credits.

A MOOC Course on Swayam/NPTEL/Coursera can be completed with supplemental credits. Students need to complete a mandatory summer internship/project (4 weeks) during the summervacation with supplemental credits.

CREDIT STRUCTURE OF THE PROGRAMME (SEMESTER – III)
(Table as per Parishishta 1 with sign of HOD and Dean)

R_____

Post Graduate Programme in University

- **MSc (Home Science – Sports Nutrition) (Two Years)**
- **MSc (Home Science – Sports Nutrition) (One Year)**

Parishishta – 1

Exit option: PG Diploma (44 Credits) after Three Year UG Degree									
Year (2 Yr PG)	**Level**	**Sem** (2 Yr)	**Major**		**RM**	**OJT/FP**	**RP**	**Cum Cr.**	**Degree**
			Mandatory*	**Electives (Any one)**					
II	**6.5**	**Sem III**	**SN03C1** Advances in Human Nutrition (Th) (4 Cr)	**SN03C5E1A** Intellectual Property Rights(IPR) in Sports Industry (Th) (2 Cr) **SN03C5E1BP** Intellectual Property Rights(IPR) in Sports Industry (Pr) (2 Cr)OR **OR** **SN03C5E2A** Technological Applications inthe Sports Industry (Th) (2 Cr) **SN03C5E2BP** Technological Applications in the Sports (Pr) (2 Cr)	-	-	**SN03C6** Research Project (4 Cr)	22	**PG Diploma (after 3 Year Degree)**
			SN03C2A Nutrition for Power and Resistance Sports (Th) (2 Cr) **SN03C2BP** Diet Planningfor Power and Resistance Sports (Pr) (2 Cr)						
			SN03C3A Nutrition for Team Sports(Th) (2 Cr) **SN03C3BP** Diet Planningfor Team Sports(Pr) (2 Cr)						
			SN03C4 Ergonomics (Th) (2 Cr)						
Sem – III (For M.Sc. Degree Two Years & One Year)			**14**	**4**	**-**	**-**	**4**	**22**	

Note: *Curriculum will be enriched by extension work and educational trips for experiential learningwith supplemental credits.

A MOOC course on SWAYAM/ NPTEL/COURSERA can be completed with supplemental credits.

CREDIT STRUCTURE OF THE PROGRAMME (SEMESTER – IV)
(Table as per Parishishta 1 with sign of HOD and Dean)

R_____

Post Graduate Programme in University

- **MSc (Home Science – Sports Nutrition) (Two Years)**
- **MSc (Home Science – Sports Nutrition) (One Year)**

Parishishta – 1

Year (2 YrPG)	Level	Sem. (2 Yr)	Major		RM	OJT/ FP	RP	Cum Cr.	Degree
			Mandatory*	**Electives (Any one)**					
II	**6.5**	**Sem IV**	**SN04C1A** Nutrition for Weight Managementand Fitness (Th) (2 Cr) **SN04C1BP** Diet Planningfor Weight Management and Fitness (Pr) (2 Cr)	**SN04C4E1A** Food Psychologyand Nutrition Counseling (Th) (2 Cr) **SN04C4E1BP** Food Psychology and Nutrition Counseling (Pr) (2Cr) **OR** **SN04C4E2A** Novel and Indigenous Approaches in Sports Performance and Fitness Management (Th) (2 Cr) **SN04C4E2BP** Novel and Indigenous Approaches inSports Performance and Fitness Management (Pr) (2 Cr)	-	-	**SN04C5** Research Project (6 Cr)	22	**PG Diploma (after 3 Year Degree)**
			SN04C2A Nutrition for Sports Personswith Special Conditions (Th) (2 Cr) **SN04C2BP** Diet Planning for Sports Persons with Special Conditions (Pr)(2 Cr)						
			SN04C3 Entrepreneurship and Managementin the Sports Industry (Th) (4 Cr)						
Sem – IV (For M.Sc. Degree Two Years & One Year)			**12**	**4**	**-**	**-**	**6**	**22**	
Cum. Cr. For 1 year P.G. Degree			**26**	**8**	**-**	**-**	**-**	**44**	
Cum. Cr. For 2 year P.G. Degree			**54**	**16**	**4**	**4**	**10**	**88**	

Note: Curriculum will be enriched by extension work and educational trips for experiential learning with supplemental credits.

A MOOC course on SWAYAM/ NPTEL/COURSERA can be completed with supplemental credits.

Students can do a summer internship/project (4 weeks) during the summer vacation with supplemental credits. (Optional)

Sign of Head of the Institute

Sign of Dean

Name of the Head of the Institute with Designation
Prof. Dr. Vishaka Ashish Karnad
I/C Principal &
Chairperson Board of Studies
Home Science

Name of the Dean

Name of the Faculty

Name of Department
Foods, Nutrition and Dietetics

Syllabus: M.Sc. (Home Science – Sports Nutrition)

Semester I **Level 6.0** **Cumulative Credits: 22**

Mandatory Course (Credits)

COURSE CODE	COURSE NO.	CREDITS	COURSE TITLE	THEORY/ PRACTICAL
SN01C1	Course 1	4	Human Physiology and Kinesiology	Theory
SN01C2	Course 2	4	Advances in Nutritional and Exercise Biochemistry	Theory
SN01C3A	Course 3 A	2	Principles of Nutritional Assessment	Theory
SN01C3BP	Course 3 B	2	Exercise Physiology and Fitness Assessment	Practical
SN01C4	Course 4	2	Descriptive statistics in Home Science	Theory
SN01C5E1A & SN01C5E1BP	Course 5 (Electives)	2	Comprehensive Health Management	Theory
		2	Comprehensive Health Management	Practical
SN01C5E2A & SN01C5E2BP		2	Strategies for Sustained Fitness for Children and Elderly	Theory
		2	Strategies for Sustained Fitness for Children and Elderly	Practical
SN01C6	Course 6	4	Research Methods in Home Science	Theory

Syllabus: M.Sc. (Home Science – Sports Nutrition)

Semester II **Level 6.0** **Cumulative Credits: 22**

Mandatory Course (Credits)

COURSE CODE	COURSE NO.	CREDITS	COURSE TITLE	THEORY/ PRACTICAL
SN02C1	Course 1	4	Nutrition Across the Life Cycle	Theory
SN02C2A	Course 2 A	2	Nutrition for Endurance sports	Theory
SN02C2BP	Course 2 B	2	Nutrition for Endurance sports	Practical
SN02C3	Course 3	4	Dietary Supplements, Functional Foods and Ergogenic Aids	Theory
SN02C4	Course 4	4	Advanced Statistics in Home Science	Theory
SN02C5E1A & SN02C5E1BP	Course 5 (Electives)	2	Sports and Fitness Based Product Development	Theory
		2	Sports and Fitness Based Product Development	Practical
SN02C5E2A & SN02C5E2BP		2	Personal Training and Rehabilitation- Insights and Opportunities	Theory
		2	Personal Training and Rehabilitation- Insights and Opportunities	Practical
SN02C6	Course 6	4	On the Job training	Practical

Syllabus

P.G. Diploma Home Science – Sports Nutrition

M.Sc. Home Science – Sports Nutrition

Semester I

Semester I

Semester I:
Mandatory Courses

M.Sc. (Home Science – Sports Nutrition)
(Under NEP)
Level – 6.0

Semester – I **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C1	Human Physiology and Kinesiology	Theory	4

Course Objectives:

1. To enable students build advanced knowledge and an understanding of the skeletal and muscular systemsand its functions.
2. To enable skill development in applying biomechanical principles in exercise and sportsand to analyze physical activity in terms of musculo-skeletal components and mechanical principles.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Define key anatomical and physiological terms related to the human body and movement.
CO2	Explain the relationship between structure and function of different body systemsinvolved in movement.
CO3	Apply physiological concepts to analyze the effects of exercise on cardiovascularsystems
CO4	Analyze the impact of different types of training on muscle adaptation and strength development
CO5	Critique the validity of scientific studies related to exercise physiology and kinesiology
CO6	Develop strategies to optimize performance and recovery through manipulation of physiological variables.

Unit No.	Course Content	No. of Hours
I.	**A. Musculoskeletal anatomy and Biomechanics** **i) Musculoskeletal anatomy** • Names of muscles • Names of joints • Names of bones,Bone cells, Bone formation & remodeling • Factors influencing bone formation • Factors influencing muscle shape and size • Bone injuries during exercise training **ii). Fundamentals of Biomechanics** • Terminology and Measurement in Biomechanics • The Description of Human Motion • The Conditions of Linear and Rotary Motion • The Center of Gravity and Stability • Exercise Selection for Resistance Training	**15**

II.	**B. Exercise Physiology and programming and Kinesiology** **i). Exercise Physiology** • Energy systems • Types of muscle fibers • Mechanism and energetics of muscle contraction • Exercise and Thermal stress **ii) Exercise Programming** • Understanding Training variables • Training for strength • Training for endurance • Training for Sport **iii) Kinesiology** • Moving Objects: -Pushing and Pulling -Throwing, Striking, and Kicking, Locomotion: Solid Surface • Locomotion: - The Aquatic Environment, When Suspended and Free of Support	**15**
III	**Digestive and Nervous system** **i) Physiology of gastrointestinal system** • Structure of GI and functions • The process of digestion and absorption of food • Factors affecting digestion, absorption and bioavailability of macro and micro nutrients • Importance of GI for sportsperson **ii). Physiology of Nervous system** • Structure of neurons • Nervous system and functions • Membrane potential • Intercellular communication • Importance of Neuro-regulation for fitness and exercise	**15**

IV	**C. Cardiopulmonary, & Renal systems** **i) Cardiopulmonary system** • Blood composition • Functions of blood and plasma proteins • Synthesis of blood elements • Cardiac cycle • Regulation of blood pressure in athletes • Factors influencing Blood Pressure • Pulmonary structure and function **ii) Renal system** • Structure and Functioning of kidneys • Formation of urine, composition of urine, normal and abnormal constituents of urine, acid - base balance. • Role of kidneys in regulation of systemic physiology in sports person	**15**
	Total Contact Hours	**60**

References:

Betts, J. G., DeSaix, P., Johnson, E., Johnson, J. E., Korol, O., Kruse, D. H., Poe, B., Wise, J. A.,Womble, M., Young, K. A. (2013). Anatomy and Physiology. (n.p.): OpenStax.

Brown, S. (2016). Fundamentals of Kinesiology. United States: Kendall Hunt Publishing Company. Bindal, V. (2018). Textbook of Kinesiology. India: Jaypee Brothers Medical Publishers Pvt. Limited.Kinanthropometry and Exercise Physiology: Volume One: Anthropometry. (2018). United Kingdom: Taylor & Francis.

Davier, A, Blakeley, G. H. and Kidd, C (2001) Human Physiology, Harcourt Pub., 1st ed. EdinburghChurchill Livingstone.Laboratory Manual, NIN.

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Tortora, G. J. and Grabowski, R. S. (1993) Principles of Anatomy and Physiology, (7th ed.).HarperCollins College Publishers.

Waugh, A. and Grant, A. (2006) Anatomy and Physiology in Health and illness Churchill Livingstone,10th ed.

Evaluation:

4 credits (Total marks 100)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with classdiscussion	20
Creating learning resources (videos or posters or brochures) for sports persons/ Class tests	20
Class participation and evaluation	10
Total	**50**

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from Unit 3	10
Question 4 from Unit 4	10
Question 5 from multiple units	10
Total	**50**

M.Sc. (Home Science – Sports Nutrition)
(Under NEP)
Level – 6.0

Semester – I **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C2	**Advances in Nutritional and Exercise Biochemistry**	**Theory**	**4**

Course Objectives:

1. To enable students understand the structure, functions and metabolism of macronutrients, and micronutrients needed as cofactors involved in macronutrient metabolism.
2. To introduce concepts of hormones and enzyme modulators.
3. To enable students compare the metabolic inter-relationship between macronutrients.
4. To equip students with knowledge of current research on nutrition, metabolism and dietetics, formulating evidence-based recommendations and propose innovative applications of biochemical knowledge in nutrition and fitness.

Course Outcomes:

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Recall key concepts in nutritional biochemistry, including macronutrients and micronutrients, and their roles in metabolic processes.
CO2	Explain the mechanisms by which different nutrients are absorbed, transported, and utilized in the body.
CO3	Apply biochemical knowledge to analyze and interpret experimental data to recommend personalized nutritional strategies for individuals with specific exercise goals, such as endurance training or muscle gain.
CO4	Analyse complex biochemical pathways and their regulation in various cellular contexts
CO5	Formulate evidence-based recommendations in implications of advancements in biochemistry for nutritional supplementation to enhance exercise recovery and reduce the risk of nutrient deficiencies in athletes.
CO6	Propose innovative applications of biochemical knowledge in nutrition and fitness.

Unit No.	Course Content	No. of Hours
I.	**Biomolecules of Nutritional Significance -1** i) Carbohydrates – classification of carbohydrates and its role in exercise. Digestion, absorption, transportation and metabolism of carbohydrate. EMP,TCA,HMP, Glycogen metabolism. Cori's cycle. Carbohydratemetabolism in exercise ii) Proteins – classification of protein and its role in exercise. Digestion, absorption, transportation and metabolism of protein. Formation of specialized products from amino acids and their functions – Glutathione, Creatine – creatinine, biogenic amines (dopamine, norepinephrine, tyranine, serotonin, GABA, histamine). Biologically important peptides (Insulin, ACTH, Oxytocin, Vasopressin, Angiotensin, TRH. Four levels of protein structure and functions of	**15**

	Insulin, Hemoglobin, Carboxypeptidase, Keratin), General reactions ofamino acids, Urea cycle, protein metabolism in exercise	
II.	**Biomolecules of Nutritional Significance - 2** i) Lipids – classification of lipids and its role in exercise. Digestion, absorption, transportation and metabolism of lipids. Compound Lipids, Fatty acids, MCT's, Cholesterol, Prostanoids, Beta Oxidation, Ketone body formation. ETC, ATP production and Mechanism of Oxidative and Substrate level phosphorylation, Lipid metabolism in exercise. ii) Enzymes- IUB classification of enzymes. Active site, CoenzymesFactors iii) Nucleic acids Structure, properties and functions of DNA, RNA. Outline of Replication, Transcription, Translation in prokaryotes. Mutation ,DNA repair mechanism	**15**
III	**C. Overview of Endocrinology** i) Classification of Hormones, mechanism of action, synthesis of hormones – Thyroxine, Catecholamines. ii). Functions and hyper – hypo states of Thyroid, Insulin, Glucagon. Adrenal, medullary and cortex iii) Clinical Research and Ethical Issues- Clinical Trials – Stages I to IV, Clinical Research and its significance , Biomedical ethics in clinical trials	**15**
IV	**D. Nutritional and Exercise biochemistry** i) Historical perspective and key developments in the field ii) Energy metabolism- Defining exercise and physical activity, Freeenergy changes in metabolic reactions, ATP for energy currency, Redoxreactions, Phases of metabolism, Overview of catabolism. iii)Interactions between nutrition, exercise and health- aerobic and anaerobic, muscular fitness and flexibility iv) Emerging technologies in nutritional and exercise biochemistry v) Eating disorders and triple syndrome of athlete vi) Fluid and electrolyte effort vii) Personalized nutrition and its implications viii) Discussion on potential future directions	**15**
	Total Contact Hours	**60**

References:

Mougios, V. (2020). Exercise Biochemistry. United Kingdom: Human Kinetics.

Maughan, R. J., Gleeson, M., Greenhaff, P. L. (1997). Biochemistry of Exercise and Training. UnitedKingdom: Oxford University Press.

Tiidus, P. M., Tupling, A. R., Houston, M. E. (2012). Biochemistry Primer for Exercise Science. United States: Human Kinetics.

Powers, S. and Dodd, Stephen (1996) Total fitness, Allyss and Bacon, Univ. of Florida.

Hoeger, W., Turner, Low and W. Hafen Brent (2002), Wellness Guidelines for a healthy lifestyleWadsworth/Thomas Learning USA.

Brannon, L. and Feist, Jess (2000), Health Psychology IV edition, An Introduction to behavior andhealth, Wadsworth USA.

Schafer Walt (1998) Stress Management for IV ed. Wellness Wadsworth USA. Mind, body and soul(1998) The body shop, Bullyinch press book, little Brown and co.

Bhat and Savur, S. (1998) Fitness for life, Jaico publishing House.

Evaluation:

4 credits (Total marks 100)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class Discussion	20
Creating summary documents on specific topics for sports persons/ coaches/ sports nutritionist/Class tests / Quiz/ Debate	20
Class participation and evaluation	10
Total	**50**

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from Unit 3	10
Question 4 from Unit 4	10
Question 5 from multiple units	10
Total	**50**

M.Sc. (Home Science – Sports Nutrition)
(Under NEP)
Level – 6.0

Semester – I **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C3A	**Principles of Nutritional Assessment**	**Theory**	**2**

Course Objectives:

To enable students:

1. Understand human body composition
2. Learn principles of body composition and nutritional assessment and develop a comprehensive nutritional assessment protocol for a community health program.

Course outcomes:

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Define the different methods of body composition, Dietary & Functional assessment.
CO2	Explain the significance of nutritional assessment in promoting overall health and preventing chronic diseases.
CO3	Apply the principles of nutritional assessment to evaluate the dietary intake of ahypothetical individual based on data from a food diary.
CO4	Evaluate the strengths and weaknesses of various nutritional assessment techniques inidentifying specific nutrient deficiencies or excesses.
CO5	Critique the validity and reliability of nutritional assessment methods in different populations, highlighting potential biases and limitations.
CO6	Develop a comprehensive nutritional assessment protocol for a community health program targeting a specific health issue, considering both individual and population-level assessment strategies.

Unit No.	Course Content	No. of Hours
I.	**A. Anthropometric Assessments** i.) Weight and linear measurements ii) Circumference measurements **B. Body Composition Assessments** i) Components of body composition ii) Human Body composition- Changes during life cycle iii) Factors influencing Body composition –Gender, Age, Exercise iv) Methods of measuring body composition	**15**

II.	**A. Biochemical & Clinical assessment of nutritional status of various agegroups & gender** i) Measurement of total body protein & fat using standard formulae & Interpretation ii) Interpretation of Biochemical assessments and its interpretation to	**15**
	determine nutritional status • Haematological Assessment • Assessment of protein nutriture • Evaluation of PEM in pediatric, adult, geriatric and sports persons. • Biomarkers of vitamin status • Assessment of Mineral nutriture iii) Clinical assessment of nutritional status **B. Dietary & Functional assessment of nutritional status** i) Dietary surveys- Tools of dietary surveys- FFQ, Interview schedules, questionnaires, SGA, Recall & record methods, Food diary, Dietary recall: 24 hour recall and 3 day recall. ii) Assessment Protocols: merits & demerits iii) Functional assessment: Functional indicators of macro and micro nutrients, disturbances & interpretation, GPAQ, WPAQ, IPAQ	
	Total Contact Hours	**30**

References:

Nutritional Status Assessment: A Manual for Population Studies. (2013). United Kingdom: Springer US.Lee, R. D., Nieman, D. C. (2007). Nutritional Assessment. United Kingdom: McGraw-Hill Higher Education.

Gibson, R. S. (2005). Principles of Nutritional Assessment. United Kingdom: Oxford University Press. Dandekar, S. P., Rane, S. A. (2004) Practical and Viva in Medical Biochemistry, New Delhi, Elsevier/Reed, Elsevier India PVT LTD.

Godkar, P. B. (2003) Textbook of Medical Laboratory Technology, (2nd ed.), Mumbai, Bhalani PublishingHouse, Mumbai.

Sadasivan , S. &Manickam, A, (2003) Biochemical Methods, (2nd ed.), New age International Pvt. Ltd. Sauberlich, H. E. (1999) Laboratory tests for the Assessment of Nutritional Status, (2nd ed.)., CRC press Laboratory Manual, NIN.

Evaluation:

2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Design and conduct surveys on different sports	10
Create nutritional assessment guidelines document for athletes/ class test/ debate	10
Class participation and evaluation	5
Total	**25**

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	**25**

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – I **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C3BP	Exercise physiology and Fitness Assessment	Practical	2

Course Objectives:

1. To enable students to understand the importance of biomarkers of nutritional status in the management of holistic fitness.
2. To equip students with practical skills in conducting health Screening & Risk Stratification using various techniques of body composition analysis.
3. To make students aware of the various techniques of evaluation and assessment of physical fitness of various groups of population.
4. To develop skills of students in creating a comprehensive nutritional assessment protocol fora community health program.

Course Outcomes:

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Apply the principles of nutritional assessment to evaluate the dietary intake of a hypothetical individual based on data from a food diary.
CO2	Evaluate the strengths and weaknesses of various nutritional assessment techniques in identifying specific nutrient deficiencies or excesses.
CO3	Critique the validity and reliability of nutritional assessment methods in differentpopulations, highlighting potential biases and limitations.
CO4	Develop a comprehensive nutritional assessment protocol for a community health program targeting a specific health issue, considering both individual and population-level assessmentstrategies.

Unit No.	Course Content	No. of Hours
I.	**A. Anthropometrical assessment of body composition** i) Height, Weight, BMI, Circumference measurements (Head, Arm, waist,abdominal circumference, WHR etc.);, shoulder girth ii) Calculating body composition using standard Formulae iii) Impedance techniques (BIA & Body stat) d) Skinfold measurements &Assessment of Body types using formulae iv) DEXA, BMD (Visit) **B. Clinical Assessment of body composition** i) Observation of clinical symptoms of nutrient deficiencies ii) Field visits/Demonstrations/Guest lectures **C. Health Screening & Risk Stratification** i)Theoretical explanation, demonstration and assessment of cardiorespiratory fitness - Treadmill stress test - Spirometry - Step tests - Resting assessments:Heart rate monitoring, Blood Pressure, Body Composition.	30

	ii) Cycle ergometer test etc. iii) Aerobic fitness testing (VO2max testing)	
II	**D. Assessment of skeletomuscular fitness-Measurement of**: i) BMD (Visit/ Demonstration) ii) Muscle strength iii) Endurance iv) Strength v) Flexibility & agility (Bench press, Jumps, Pushups, Sit and Reach Test),Sit-ups, Shuttle run, Hand grip dynamometer etc) **E. Assessment of physical fitness of various groups of population**- children,adolescents, adults & elderly –case study. Metabolic Calculations **F. Dietary assessment of nutritional status** Conduction of Dietary surveys- Tools of dietary surveys- FFQ, Interview schedules, questionnaires, SGA, Recall & record methods, Food diary, Dietary recall: 24 hour recall and 3 day recall. Basic of nutrition and diet planning, balanced diet.	**30**
	Total Contact Hours	**60**

References:

Nutritional Status Assessment: A Manual for Population Studies. (2013). United Kingdom:Springer US.

Lee, R. D., Nieman, D. C. (2007). Nutritional Assessment. United Kingdom: McGraw-Hill HigherEducation.

Dandekar, S. P., Rane, S. A. (2004) Practical and Viva in Medical Biochemistry, New Delhi,Elsevier/Reed, Elsevier India PVT LTD.

Sauberlich, H. E. (1999) Laboratory tests for the Assessment of Nutritional Status, (2nd ed.)., CRCpress Laboratory Manual, NIN.

Davier, A, Blakeley, G. H. and Kidd, C (2001) Human Physiology, Harcourt Pub., 1st ed. EdinburghChurchill Livingstone.

Laboratory Manual, NIN McArdle, WD., Katch, F. L. &Katch, VL (1996) Exercise Physiology, (4thed.), Williams & Wilkins, A Waverly Company.

Rhodes, R &Pflouzer, R (2003) Human Physiology, Thomson Brooks & Cole, (4th Ed).

Tortora, G. J. and Grabowski, R. S. (1993) Principles of Anatomy and Physiology, (7th ed.).HarperCollins CollegePublishers.

Waugh, A. and Grant, A. (2006) Anatomy and Physiology in Health and illness ChurchillLivingstone, 10th ed.

Evaluation: 2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	Marks
Journal	5
Class participation and evaluation	5
Interpret anthropometric or clinical assessment data and create report	5
Plan and prepare diet as per case study	10
Total	**25**

SEMESTER END EXAM	Marks
All questions are compulsory with internal choice.	
Question from Unit 1	10
Question from Unit 2	10
Question 3: Viva-voce examination	5
Total	**25**

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester- I **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C4	Descriptive Statistics in Home Science	Theory	2

Course Objectives:

1. To enable students value the sine qua non role of statistics in quantitative research.
2. To enable students to understand the skills in selecting, computing, interpreting and reporting descriptive statistics.
3. To facilitate comprehension of elementary concepts in probability.
4. To introduce students to a specialized statistical software such as SPSS.

Course Outcomes:

On successful completion of the course, the student will be able to:

Course Number	Course Outcome
CO1	Identify the level of measurement of a variable and the corresponding suitablestatistical technique to describe this variable.
CO2	Differentiate between, evaluate, and select different descriptive statistical techniquesto numerically and graphically summarize data.
CO3	Apply knowledge and skills to design and conduct descriptive research studies.
CO4	Use SPSS for data entry, data management, and descriptive statistics effectively.

Unit No.	Course Content	No. of Hours
I.	**A. Introduction and overview to statistics** i) Role of statistics in (quantitative) research ii) Definition/changing conceptions iii) Prerequisite concepts in mathematics (e.g., basic algebra,properties of the summation sign) **B. Descriptive Statistics for summarizing ratio level variables** i) Frequencies and percentages ii) Computing an average/measure of a central tendencyMean, median, mode(s) Contrasting the mean vs. median Computing an average when there are outliers or extreme values inthe data set Robust measures of the center (5% trimmed mean; M estimators) Quartiles and percentiles iii) Computing a measure of variability or dispersionWhy? (inadequacy of the mean) Minimum value and maximum value, Range, Interquartile range	**15**

	Variance and standard deviation iv) Discrete and continuous variables v) Histograms and line graphs	
II.	**A. Descriptive Statistics for summarizing nominal, ordinal andinterval level variables** **B. Using specialized software such as SPSS** i) Data Entry ii) Data Management iii) Descriptive Statistics **C. Probability** i) Definition ii) Role of probability in research and statistics iii) Elementary concepts in probability Sample space, experiment, event/outcome/element of the sample spaceEqually likely outcomes and the uniform probability model Stabilization of the relative frequency	**15**
	Total Contact Hours	**30**

References:

Bhattacharyya, G.K., & Johnson, R.A. (1977). Statistical concepts and methods. John Wiley.(classic)

Jackson, S. L. (2012). Research methods and statistics: A critical thinking approach (4th ed.). Wadsworth Cengage Learning.

Johnson, R. A., & Bhattacharyya, G. K. (2019). Statistics: Principles and methods (8th ed.). JohnWiley.

Martin, W. E., & Bridgmon, K. D. (2012). Quantitative and statistical research methods. Jossey-Bass.

Kachigan, S. K. (1986). Statistical analysis: An interdisciplinary introduction to univariate &multivariate methods. Radius Pr.

Kerlinger, F. N. & Lee, H. B. (2000). Foundations of behavioral research. Harcourt. Wheelan, C. J. (2014). Naked statistics: Stripping the dread from the data. W.W. Norton.

Evaluation:
2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written Short Quizzes	10
SPSS data entry & descriptive statistical analysis assignment	5
Problem-solving Exercises (in pairs or individually) & Practice Sums (individually)	10
Total	**25**

SEMESTER-END EXAMINATION	
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	**25**

Semester I: Elective Courses

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – I **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C5E1A	**Comprehensive Health Management**	**Theory**	**2**

Course Objectives:

1. To enable students understand the concepts of spiritual health, its benefits in the healing process andmultidisciplinary strategies in preserving health.
2. To facilitate in students the skill development of applications of multidisciplinary strategies in health preservation and as adjuncts in disease management.

Course Outcomes:

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	List key components of a comprehensive health management plan, includingpreventive measures and health promotion strategies.
CO2	Explain the relationships between lifestyle choices, environmental factors, and healthoutcomes.
CO3	Apply comprehensive strategies to improve overall health and wellbeing
CO4	Analyze case studies of individuals with chronic health conditions, identifying the multifaceted factors contributing to their health status.
CO5	Assess the effectiveness of health education campaigns in influencing health behaviors and promoting disease prevention.
CO6	Design a holistic health program that addresses specific health needs

Unit No.	Course Content	No. of Hours
I.	**A. The Comprehensive Health Management system:** ● The definition, history and rationale of comprehensive system for health care ➢ Medicine and its branches ➢ Nutrition, counseling and psychotherapy ➢ Mental health and wellbeing ➢ Physiotherapy ➢ Speech language pathology ➢ Exercise physiology and kinesiology ➢ Fitness training ➢ Chiropractice ➢ Para sports ➢ Army sports ➢ Other related disciplines. **B. Introduction to Spiritual Health** i) Understanding Spiritual Health ii)Physical, emotional and mental health benefits of spirituality iii)Self-Awareness and Mindfulness ● Self-awareness techniques.	**15**

	• Introducing mindfulness meditation. • Cultivating present-moment awareness. Journaling and Reflection Connection and Community	
II.	**A. Principles of Comprehensive health and wellness strategies to preserve health, combat diseases, promote emotional and mental wellbeing; and help pain management in conditions with lifestyle based etiologies:** i) Gym based aerobic exercises/Gym based resistance training, Exercises for flexibility ii) Calisthenics iii) Dance- Traditional, contemporary and applied iv) Yoga, Power yoga and meditation v) Other Forms of Fitness vi) Ayurveda vii) Energy healing viii) Laughter therapy ix) Acupuncture / acupressure x) Music therapy xi) Art-based therapy xii) Nature therapy xiii) Hypnotherapy xiv) Neuro Linguistic Programming **B. Exposure or inputs with new emerging technology**	**15**
	Total Contact Hours	**30**

References:

Spirit, Science, and Health: How the Spiritual Mind Fuels Physical Wellness. (2007). United Kingdom: Bloomsbury Academic.

Spirituality and Religion Within the Culture of Medicine: From Evidence to Practice. (2017). United States: Oxford University Press.

Alman, B. M., Lambrou, P. (2013). Self-Hypnosis: The Complete Manual for Health and Self-Change, Second Edition. United Kingdom: Taylor & Fran.

Art Therapy and Health Care. (2012). United States: Guilford Publications.

Ayurveda: A Preventive Approach to Lifestyle Diseases. (2023). (n.p.): Book Bazooka Publication.

Bays, J. C. (2017). Mindful Eating: A Guide to Rediscovering a Healthy and Joyful Relationship with Food (Revised Edition). United Kingdom: Shambhala.

Circadian Clocks: Role in Health and Disease. (2016). United States: Springer New York.

Elkins, G. (2016). Handbook of Medical and Psychological Hypnosis: Foundations, Applications, and Professional Issues. United States: Springer Publishing Company.

Henwood, S., Lister, J. (2007). NLP and Coaching for Health Care Professionals: Developing Expert Practice. Germany: Wiley.

Jarmey, C., Hearn, G. (2001). The Book of Meditation: Practical Ways to Health and Healing. United States: Journey Editions.

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Sarris, J., Wardle, J. (2010). Clinical Naturopathy: An Evidence-based Guide to Practice. United Kingdom: Elsevier Health

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Tribole, E., Resch, E. (2020). Intuitive Eating, 4th Edition: A Revolutionary Anti-Diet Approach. United States: St. Martin's Publishing Group.
Leach, R. A. (2004). The Chiropractic Theories: A Textbook of Scientific Research. United Kingdom: Lippincott Williams & Wilkins.
Kadetz, P., Herbert, P., Vance, L. M., Harris, P., Arroll, D. M. A., Qu, F., Robinson, N., Flower, A., Mathie, R. T., Conti, S., Vexler, A., Edry-Botzer, L., Lev-Ari, S., Sisco, M., Bhatt, N. S., Chen, K. W., Roberts, B. L., Song, R., Ahn, S., Lam, P., Trewhel, A. (2015). Methodologies for Effectively Assessing Complementary and Alternative Medicine (CAM): Research Tools and Techniques. United Kingdom: Jessica Kingsley Publishers.
Cummings, L. (2018). Speech and Language Therapy: A Primer. United Kingdom: Cambridge University Press.
Smith, D., Plowman, S., Ormsbee, M. (2022). Exercise Physiology for Health, Fitness, and Performance. United States: Wolters Kluwer Health.
An illustrative practical book for physiotherapy students. (2020). (n.p.): BlueRose Publishers.
Claringbull, N. (2010). What is Counselling and Psychotherapy?. United Kingdom: SAGE Publications.
Paralympics and Disability Sport. (2016). United Kingdom: Taylor & Francis.
Handbook of Sports Medicine and Science: The Paralympic Athlete. (2011). Germany: Wiley.

Evaluation:
2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class Discussion/ Class test/ Quiz/ Debate	15
Certified course on spiritual or holistic health practices by qualified practitioners	5
Class participation and evaluation	5
Total	**25**
SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	**25**

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – I **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C5E1BP	**Comprehensive Health Management**	**Practical**	**2**

Course Objectives:

1. To enable students understand the principles of comprehensive approach for health management.
2. To train the students in conducting holistic nutrition and lifestyle education programmes for health management.

Course Outcomes:

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Apply comprehensive strategies to improve overall health and wellbeing
CO2	Analyze case studies of individuals with chronic health conditions, identifying themultifaceted factors contributing to their health status.
CO3	Assess the effectiveness of health education campaigns in influencing healthbehaviors and promoting disease prevention.
CO4	Design a holistic health program that addresses specific health needs

Unit No.	Course Content	No. of Hours
I.	Planning and organizing information sessions and developing nutrition education resources in comprehensive health wellness management in theaspects of: Spiritual well being Any other evidence-based approach/practice	**30**
II.	Planning and organizing information sessions and developing nutrition education resources in Holistic wellness management in the aspects of :Nutrition and fitness Any other evidence-based approach/practice	**30**
	Total Contact Hours	**60**

References:

Spirit, Science, and Health: How the Spiritual Mind Fuels Physical Wellness. (2007). UnitedKingdom: Bloomsbury Academic.

Spirituality and Religion Within the Culture of Medicine: From Evidence to Practice. (2017). UnitedStates: Oxford University Press.

Rosmarin, David H. & Koenig, Harold G. (2020). Handbook of Spirituality, Religion, and MentalHealth. 2nd Edition.

Spiritual Health: Spirituality, Religion, Science, Health and our Thought Processes. A ParadigmShift in understanding of their interactions and relations.. (2018). (n.p.): Notion Press.

Alman, B. M., Lambrou, P. (2013). Self-Hypnosis: The Complete Manual for Health and Self-

Change, Second Edition. United Kingdom: Taylor & Fran.
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Luthra, O. P. (2016). Healing Without Medicine: Restoring Well-Being with Accupressure. India: B. Jain Publishers Pvt. Limited.
Nelson JB. (2017). Mindful Eating: The Art of Presence While You Eat. Diabetes Spectr. 2017Aug;30(3):171-174.
Sarris, J., Wardle, J. (2010). Clinical Naturopathy: An Evidence-based Guide to Practice. UnitedKingdom: Elsevier Health Sciences.
Scott Shannon. (2002). Complementary and Alternative Strategies for Mental Health. Elsevier Inc Tribole, E., Resch, E. (2020). Intuitive Eating, 4th Edition: A Revolutionary Anti-Diet Approach. United States: St. Martin's Publishing Group.

Evaluation:
2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Journal	5
Planning and organizing information sessions and developing nutrition education resources in spiritual and holistic wellness management	15
Class participation and evaluation	5
Total	25

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3: Viva-voce examination	5
Total	25

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – I **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C5E2A	**Strategies for Sustained Fitness for Children andElderly**	**Theory**	**2**

Course Objectives:

1. To facilitate students develop exercise routines suitable for children that promote growth, motorskill development, and cardiovascular health.
2. To enable students create safe and effective fitness programs for elderly individuals that enhance balance, mobility, and functional independence.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	List common health challenges faced by children and elderly individuals when itcomes to maintaining fitness.
CO2	Recognize the importance of age-appropriate exercise strategies for children andelderly individuals to maintain overall health.
CO3	Design appropriate exercise routines for children and elderly that take into accounttheir developmental stages and physical capabilities.
CO4	Compare and contrast the benefits and potential risks of various fitness strategies forchildren and elderly individuals.
CO5	Critique existing fitness programs targeting children and elderly individuals,assessing their effectiveness and appropriateness.
CO6	Construct comprehensive long-term fitness plans for elderly individuals that encompass cardiovascular, strength training, balance, and flexibility exercises, while adapting to changing health conditions.

Unit No.	Course Content	No. of Hours
I.	**A. Strategies for Sustained Fitness for Children** i) Introduction to Children's Fitness and its benefits ii) Creating a fitness mindsets iii) Parents as role models for fitness- nutrition, overall wellness activity,sleep iv) School as a medium in inculcating good lifestyle choices v) Use of play therapy for fitness in children vi) Use of unstructured sports and recreational play vii) Usage of structured sports and games- gymnastics, etc. viii) Dance, Martial arts ix) Mind games to improve cognitive health x) Nutritional education	**15**

II.	**B. Strategies for Sustained Fitness for Elderly** i) Introduction to Fitness for elderly ii) Safe and Effective Exercise Selection iii) Physical - • Building Strength and Muscle Mass • Flexibility and Mobility- yoga, stretching and bending exercises • Balance and Fall Prevention iv) Cardiovascular Health and Endurance v) Nutrition and Hydration for Seniors vi) Mental Well-being and Lifestyle • Social relationship, Group sessions, laughter club, hobbies • Meditation vii) Physiotherapy and Rehabilitation in case of injuries viii) Lifestyle changes- sleep, stress ix) Exercise to support bone health, arthritis, water based activities x) Neurological disorder xi) Nature bathing **C. Exposure or inputs with new emerging technology**	**15**
	Total Contact Hours	**30**

References:

Wachira, L.-J. (Ed.). (2023). Sport and Fitness in Children and Adolescents - A MultidimensionalView. IntechOpen. doi: 10.5772/intechopen.98108.

Parenting Matters: Supporting Parents of Children Ages 0-8. (2016). United States: NationalAcademies Press.

Physical Activity and Educational Achievement: Insights from Exercise Neuroscience. (2017). United Kingdom: Taylor & Francis.

Brill, P. A. (2004). Functional Fitness for Older Adults. United Kingdom: Human Kinetics.

Taylor, A. W., Johnson, M. J. (2008). Physiology of Exercise and Healthy Aging. United Kingdom:Human Kinetics.

Exercise for Aging Adults: A Guide for Practitioners. (2015). Germany: Springer InternationalPublishing.

Pardini, A., Mahoney, C. (1987). A Resource Guide for Fitness Programs for Older Persons. UnitedStates: The Administration.

Evaluation:

2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class Discussion/ Class test/ Quiz/ Debate	15
Certified course on Strategies for Sustained Fitness for Children andElderly by qualified practitioners	5
Class participation and evaluation	5
Total	**25**

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	**25**

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – I **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C5E2BP	**Strategies for Sustained Fitness for Children andElderly**	**Practical**	**2**

Course Objectives:

1. To enable students to understand the importance of sustained fitness for children and elderly.
2. To train the students in conducting nutrition education programmes for fitness in children and elderly.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Design appropriate exercise routines for children and elderly that take into accounttheir developmental stages and physical capabilities.
CO2	Compare and contrast the benefits and potential risks of various fitness strategies for children and elderly individuals.
CO3	Critique existing fitness programs targeting children and elderly individuals,assessing their effectiveness and appropriateness.
CO4	Construct comprehensive long-term fitness plans for elderly individuals thatencompass cardiovascular, strength training, balance, and flexibility exercises, while adapting to changing health conditions.

Unit No.	Course Content	No. of Hours
I.	Organizing activities and nutrition education programmes, and creating educational resources for developing long term fitness of children and adolescents.	**30**
II.	Organizing activities and nutrition education programmes, and creating educational resources for developing long term fitness of theelderly.	**30**
	Total Contact Hours	**60**

References:

Wachira, L.-J. (Ed.). (2023). Sport and Fitness in Children and Adolescents - A MultidimensionalView. IntechOpen. doi: 10.5772/intechopen.98108.

Parenting Matters: Supporting Parents of Children Ages 0-8. (2016). United States: NationalAcademies Press.

Physical Activity and Educational Achievement: Insights from Exercise Neuroscience. (2017). United Kingdom: Taylor & Francis.

Brill, P. A. (2004). Functional Fitness for Older Adults. United Kingdom: Human Kinetics.

Taylor, A. W., Johnson, M. J. (2008). Physiology of Exercise and Healthy Aging. United Kingdom:Human Kinetics.

Exercise for Aging Adults: A Guide for Practitioners. (2015). Germany: Springer InternationalPublishing.
Pardini, A., Mahoney, C. (1987). A Resource Guide for Fitness Programs for Older Persons. UnitedStates: The Administration.

Evaluation:
2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Journal	5
Organizing activities and nutrition education programmes for fitness for children and Elderly	15
Class participation and evaluation	5
Total	**25**

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3: Viva-voce examination	5
Total	**25**

Semester-I:
Research Methods

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester- I **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN01C6	Research Methods in Home Science	Theory	4

Course Objectives:

1. To build in students' appreciation for high quality research in their specialisation and allied areas.
2. To enable students master the knowledge and skills needed in conducting specialisation-specific and interdisciplinary research relevant to the multiple disciplines under the umbrella of Home Science.
3. To promote academic, research and professional ethics in students.
4. To introduce students to principles of good scientific writing.

Course Outcomes:

At the end of the course the student will be able to:

Course Number	Course Outcome
CO1	Have heightened appreciation for high quality research in their specialisation andallied areas.
CO2	Identify, differentiate between, evaluate, and select different sampling techniques andresearch designs for particular research aims.
CO3	Formulate a research proposal on a worthwhile topic in their discipline, as also oninterdisciplinary topics.
CO4	Abide with ethical guidelines for research.
CO5	Have the necessary knowledge and skills to contribute to their discipline through conducting primary and original research on socially relevant, green, and high prioritytopics.

Unit No.	Course Content	No. of Hours

I.	**A. Introduction and overview** i. What is research? ii. Importance of research in general, and in each specialisation of HomeScience and allied areas; illustration of research in each specialisationof Home Science and allied areas iii. Steps in the research process iv. Qualitative versus quantitative research v. Objectivity and subjectivity in scientific inquiry: Premodernism,modernism, and postmodernism **B. The beginning steps in the research process**	**15**

	i. Identifying broad areas of research in a discipline ii. Identifying interest areas; using multiple search strategies iii. Prioritizing topics; specifying a topic; feasibility iv. Review of literature/scholarly argument in support of study v. Specifying research objectives/hypotheses/questions	
II.	**A. Variables** i. Definition ii. Characteristics iii. Types iv. Levels of measurement **B. Measurement** i. Conceptual definitions and operational definitions ii. Types of validity and reliability in quantitative research **C. Data entry in quantitative research** i. Codebook and master sheet ii. Creating data files and data management	**15**
III	**A. Sampling techniques in quantitative research** i. Probability and nonprobability sampling methods in current use/examples from current research ii. Issues with regard to sampling techniques **B. Research designs in quantitative research** Distinguishing between the following research designs; and, selectingresearch designs that are congruent with one's research purpose. i. Experimental, quasi-experimental, and pre-experimental researchdesigns; correlational research design Inferring causality, internal validity, external validity ii. Epidemiological research designs (cross-sectional, cohort, & case-control studies); developmental research designs (cross-sectional, longitudinal, sequential research designs; additive, mediator & moderator models; cross-lagged panel analyses); survey and marketresearch designs; meta-analysis iii. Exploratory, descriptive, and explanatory designs iv. Mixed methods research designs	**15**
IV	**A. Qualitative research methods** i. Ideology/worldview of the qualitative researcher ii. Research designs in qualitative research iii. Sampling techniques in qualitative research iv. Data collection methods in qualitative research v. Data analytic strategies in qualitative research vi. Reporting of results in qualitative research **B. Scientific writing** i. Distinguishing scientific writing from popular and literary writingstyles	**15**

	ii. Publication guidelines (APA7); characteristics/principles of scientificwriting; examples of good scientific writing iii. Writing a research proposal/research grant; seeking funding iv. Reporting statistical findings in text **C. Ethics** i. In academia ii. In research in general iii. In research with human participants (Nuremberg Code, BelmontReport, ICMR Guidelines) iv. In research with animal subjects	
	Total Contact Hours	**60**

References:

American Psychological Association. (2019). Publication manual of the American PsychologicalAssociation (7th ed.). APA.

Bhattacharyya, G.K., & Johnson, R.A. (1977). Statistical concepts and methods. John Wiley. (classic)

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approach (4thed.). Sage.

Denzin, N. K., & Lincoln, Y. S. (2011). The Sage handbook of qualitative research. Sage.

Fraenkel, J. R., & Wallen, N. E. (2006). How to design and evaluate research in education (6th ed.). McGraw-Hill.

Jackson, S. L. (2012). Research methods and statistics: A critical thinking approach (4th ed.). WadsworthCengage Learning.

Johnson, R. A., & Bhattacharyya, G. K. (2019). Statistics: Principles and methods (8th ed.). John Wiley.Martin, W. E., & Bridgmon, K. D. (2012). Quantitative and statistical research methods. Jossey-Bass.

Merriam, S. B., & Tisdell, E. J. (2015). Qualitative research: A guide to design and implementation (4thed.). John Wiley.

Patton, M. Q. (2002). Qualitative research & evaluation methods (3rd ed.). Sage. Kerlinger, F. N. & Lee, H. B. (2000). Foundations of behavioral research. Harcourt.

Leong, F.T.L. & Austin, J. T. (Eds.) (2006). The psychology research handbook: A guide for graduatestudents and research assistants (2nd ed.). Sage.

Rubin, A., & Babbie, E. R. (2011). Research methods for social work (7th ed.). Thomson, Brooks/Cole.

Evaluation:
4 credits (Total marks 100)

CONTINUOUS INTERNAL EVALUATION:	Marks
Written Short Quizzes	10
Class participation and evaluation	10
Group project to be completed in pairs or threes: Formulating a Research Proposal on aHigh Priority Topic relevant to each student group's specialization; students can opt to work on interdisciplinary research project proposals with team members from more than one specialization of Home Science	30
Total	50

SEMESTER-END EXAMINATION	Marks
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from Unit 3	10
Question 4 from Unit 4	10
Question 5 from multiple units	10
Total	50

Syllabus

P.G. Diploma Home Science – Sports Nutrition

M.Sc. Home Science – Sports Nutrition

Semester II

Semester II

Semester II:
Mandatory Courses

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C1	Nutrition Across the Life Cycle	**Theory**	**4**

Course Objectives:

1. To understand the changes in human body composition during different stages of life.
2. To study the influence of nutrition on man during the different stages of life cycle.
3. To be aware and update the knowledge in the field of applied nutrition during the life cycle.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Recall the nutritional requirements for various age groups, including infants, children, adolescents, adults, and older adults.
CO2	Explain the physiological changes that occur during different life stages and their implications for nutritional needs.
CO3	Develop personalized dietary plans for individuals at different life stages, considering specific nutritional needs and health conditions
CO4	Analyze case studies to identify and address nutritional issues in diverse populations.
CO5	Assess the impact of various factors affecting nutritional choices and health outcomes.
CO6	Design educational materials or interventions to promote healthy nutrition practices in specific life stages or population groups.

Unit No.	Course Content	No. of Hours
I.	Preconceptional Nutrition & Epigenetic Implications -overview Nutrition during Pregnancy & lactation A. Pregnancy: ● Physiology of pregnancy ● Effect of Nutritional Status on pregnancy outcome ● Factors affecting fertility ● Nutritional requirements and dietary guidelines (Macro and micro) ● Nutrition related complications ● Role of dietary supplements and physical activity B. Lactation: ● Physiology of Lactation- Mammary gland development, Lactogenesis, Let-down reflex ● Human milk composition ● Benefits of Breastfeeding ● Complications of breastfeeding ● Nutritional requirements & dietary guidelines for lactating mothers ● Supplements and maternal medications	**15**

II.	Nutrition in infancy & childhood A. Nutrition in Infancy: ● Overview of breastfeeding ● Complementary feeding stages (7-12 months) ● Nutrition for Preterm babies, LBW, VLBW B. Nutrition in Toddlerhood & Early childhood (4-6 years) ● Physiological changes ● Nutritional requirements ● Nutrition education C. Nutrition in Middle (6-8 years) & Late childhood (9-12 years) ● Physiological changes ● Nutritional requirements ● Nutrition education ● Growth monitoring	**15**
III	**Nutrition in the Adolescence & adulthood** A. Nutrition in Adolescence ● Physiological and Psychosocial changes ● Growth and Sexual Maturity ● Nutritional and lifestyle requirements ● Concerns B. Nutrition in Adults ● Physiological and Psychosocial changes ● Nutritional requirements of adults (Early and Middle adulthood) ● Concerns	**15**
IV	**Nutrition for Geriatrics** ● Theories of Aging, Physiological and Psychosocial changes in the elderly ● The Aging Process ● Stages of aging ● Nutritional requirements of the Elderly ● Common nutritional concerns- Sarcopenia, Osteoporosis , Osteoarthritis, fractures, falls, injuries, Dementia, Metabolic syndrome, Respiratory problems – COPD, Pneumonia, tuberculosis and lung cancer. ● Nutrition care process for elderly- assessment, consultation ● Food, medicines and nutraceutical interactions.	**15**
	Total Contact Hours	**60**

References:

Nutrition Across the Lifespan for Healthy Aging: Proceedings of a Workshop. (2017). United States: National Academies Press.

Ageing and Nutrition Through Lifespan. (2020). Switzerland: Mdpi AG.

Shepherd, S., Thodis, A. (2020). Food and Nutrition Throughout Life: A Comprehensive Overview of Food and Nutrition in All Stages of Life. United Kingdom

Brown, J. E., Isaacs, J. S. (2011). Nutrition Through the Life Cycle. United Kingdom: Wadsworth Cengage Learning.

Langley-Evans, S. (2013). Nutrition: A Lifespan Approach. Germany: Wiley.

Nutraceuticals in Brain Health and Beyond. (2020). Netherlands: Elsevier Science.

Bernstein, M., McMahon, K. (2022). Nutrition Across Life Stages. United States: Jones & Bartlett Learning.

Bennion, H. (1979) Clinical Nutrition, New York Harper and Raw Publishers

Brown, J. E. (1998). Nutrition Now, West/Wadsworth: International Thomson Pub. Co.

Brown, J. E., Sugarman, I. J. (2002). Nutrition through the Life Cycle, Wadsworth Thomson Learning.

Groff, J. L and Gropper, S. S. (1999). Advanced Nutrition and Human Metabolism, Belmount CA: Wadsworth/Thomson Learning.

Jackson, M. S., Rees, Jane, M., Golden, Neville, H.; Irwin Charles, E. (ed) (1997). Adolescent Nutritional Disorders.NewYork:The New York Academy of Science.

Evaluation:
4 credits (Total marks 100)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion/ Creating learning resources (videos or posters or brochures)	20
Class test/ Quiz/ Group Discussion	20
Class participation and evaluation	10
Total	**50**
SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from Unit 3	10
Question 4 from Unit 4	10
Question 5 from multiple units	10
Total	**50**

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C2A	Nutrition for Endurance sports	**Theory**	**2**

Course Objectives:

1. To enable students understand the principles of nutrition for endurance athletes
2. To impart knowledge on sports specific nutrition & hydration guidelines
3. To enable students to understand the applications of ergogenic aids in endurance sports.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Define the fundamental principles of nutrition and their relevance to endurance sports.
CO2	Identify the relationship between nutrition, hydration, and endurance sports performance.
CO3	Design personalized nutrition plans for endurance athletes based on individual needs and training regimens.
CO4	Assess the impact of dietary choices on endurance performance, recovery, and long-term health
CO5	Critically evaluate current research and literature on nutrition for endurance sports.
CO6	Formulate innovative approaches to address nutritional challenges specific to individual athletes and various endurance sports.

Unit No.	Course Content	No. of Hours
I.	• Types of endurance sports; Energy & Macronutrient needs • Types of endurance sports; body compositional standards • Energy metabolism during endurance exercise & energy needs of endurance athletes • Macronutrient needs of endurance athletes • Sport specific nutritional guidelines • Counting Energy expenditure • Carbohydrates-Type & Timing of carbohydrate ingestion, Glycogen loading techniques • Lipids- Use of ketogenic diets, Fat loading, strategies to enhance fat utilization/ Fat burners • Proteins-Requirements, Role of protein in endurance exercise • Dietary guidelines for training & competition • Dietary guidelines on season and off season	**15**

II.	Micronutrient & Hydration requirements of endurance athletes A. Micronutrient requirements ● Vitamins ○ Fat Soluble vitamins- A,D,E,K ○ Water soluble vitamins- B Complex, Vitamin C ● Antioxidant micronutrients ● Minerals: Micronutrients that regulate energy metabolism, ● Use of supplements ● Phytochemicals and Functional foods of benefit B. Hydration requirements ● Effect of Water & Electrolytes: Fluid & electrolyte requirements, Dehydration ● Fluid & electrolyte replacement strategies ● Sports drinks and sports gel C. Sports specific nutritional & hydration guidelines ● Short & long duration events eg: cycling, marathon, Triathlon, swimming, Rowing, sailing, etc. ● Dietary guidelines for training & competition ● Dietary guidelines on season and off season ● Sweat rate calculation.	**15**
	Total Contact Hours	**30**

References:

Ryan, M. (2012). Sports Nutrition for Endurance Athletes, 3rd Ed.. United States: VeloPress.

Eberle, S. G. (2013). Endurance Sports Nutrition. United States: Human Kinetics.

Fink, D., Fink, M. (2013). IronFit Strength Training and Nutrition for Endurance Athletes: Time Efficient Training Secrets for Breakthrough Fitness. United States: Lyons Press.

Fitzgerald, M. (2016). The Endurance Diet: Discover the 5 Core Habits of the World's Greatest Athletes to Look, Feel, and Perform Better. United States: Hachette Books.

Nutrition and Enhanced Sports Performance: Muscle Building, Endurance, and Strength. (2013). Netherlands: Elsevier Science.

Greenfield, B. (2012). Holistic Fueling for Ironman Triathletes: How to Fuel for Endurance Sports Without Destroying Your Body. United States: Price World Publishing.

Fink, H. H., Mikesky, A. E., Burgoon, L. A. (2011). Practical Applications in Sports Nutrition. United States: Jones & Bartlett Learning.

Nutrition for Sport, Exercise and Performance: A Practical Guide for Students, Sports Enthusiasts and Professionals. (2020). United Kingdom: Taylor & Francis.

Ryan Monique (2015) Sports Nutrition for Endurance Athletes, 3rd Ed. 3002 Sterling Circle, Suite 100, Boulder, Colorado 80301-2338 USAISBN 978-1-934030-82-0

Brouns Fred and Caustan – Cargill (2002) Essentials of Sports Nutrition – 2nd edition

John Wiley and Sons,England. Burke Louse and Deakin Vicky (2006) Clinical Sports Nutrition, McGraw – Hill Pvt. Ltd. Australia

Summerfield Lianne M (2001), Nutrition Exercise and Behavior An integrated approach to weight management,Belmount (USA). Wadsworth/Thompson Learning

Wolinskoy Ira, Driskell J. (2004) Nutritional Ergogenic Aids, CRC Press NY.

Evaluation:

2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	Marks
Preparation of Powerpoint presentations on topics assigned	15
Quiz/ Debate/ Class discussion/ Class test	5
Class participation and evaluation	5
Total	**25**

SEMESTER-END EXAMINATION	Marks
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	**25**

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C2BP	NUTRITION FOR ENDURANCE SPORTS	**Practical**	**2**

Course Objectives:

1. To enable students to learn planning & cooking of diet for endurance sports persons of various age groups & gender.
2. To train the students in conducting case studies on endurance sports persons

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Define the fundamental principles of nutrition and their relevance to endurance sports.
CO2	Identify the relationship between nutrition, hydration, and endurance sports performance.
CO3	Design personalized nutrition plans for endurance athletes based on individual needs and training regimens.
CO4	Assess the impact of dietary choices on endurance performance, recovery, and long-term health
CO5	Critically evaluate current research and literature on nutrition for endurance sports.
CO6	Formulate innovative approaches to address nutritional challenges specific to individual athletes and various endurance sports.

Unit No.	Course Content	No. of Hours
I.	Planning & preparation of diets for - Distance Running, Marathon, Ultra marathon, Obstacle racing and Triathlon, Gymnastics.	**15**
II.	Planning & preparation of diets for - Road Cycling, Mountain Biking, Track Cycling, and Cyclo-Cross, Cross-country skiing, Rowers and swimmers	**15**
	Total Contact Hours	**30**

References:

Taylor & Francis (2020). .Nutrition for Sport, Exercise and Performance: A Practical Guide for Students, Sports Enthusiasts and Professionals. United Kingdom

Fink, H. H., Mikesky, A. E. (2013). Practical Applications in Sports Nutrition. United States: Jones & Bartlett Learning.

Ryan, M. (2012). Sports Nutrition for Endurance Athletes, 3rd Ed.. United States: VeloPress.

Benardot, D. (2011). Advanced Sports Nutrition. United Kingdom: Human Kinetics, Incorporated.

Fink, H. H., Mikesky, A. E., Burgoon, L. A. (2011). Practical Applications in Sports Nutrition. United States: Jones & Bartlett Learning.

Ryan Monique (2015) Sports Nutrition for Endurance Athletes, 3rd Ed. 3002 Sterling Circle, Suite 100, Boulder, Colorado 80301-2338 USAISBN 978-1-934030-82-0

Brouns Fred and Caustan – Cargill (2002) Essentials of Sports Nutrition – 2nd edition

John Wiley and Sons,England. Burke Louse and Deakin Vicky (2006) Clinical Sports Nutrition, McGraw – Hill Pvt. Ltd. Australia

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Journal	5
Continuous Evaluation: Assessment of case studies	15
Class participation and evaluation	5
Total	**25**

Evaluation: 2 credits (Total marks 50)

SEMESTER END EXAM	**Marks**
All questions are compulsory with internal choice.	
Question 1 from unit 1	10
Question 2 from unit 2	10
Question 3: Viva-voce examination	5
Total	**25**

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C3	Dietary Supplements, Functional Foods and Ergogenic Aids	**Theory**	**4**

Course Objectives:

To enable students, understand:

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

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Recall and identify various dietary supplements, functional foods, and ergogenic aids commonly used in nutrition and sports science.
CO2	Understand the principles of ergogenic aids and their impact on physical performance.
CO3	Utilize functional foods in designing balanced and targeted meal plans for specific health conditions or performance enhancements.
CO4	Critically assess the potential risks and benefits of incorporating specific dietary supplements and functional foods into an individual's diet.
CO5	Evaluate the ethical considerations and legal implications surrounding the use of ergogenic aids in sports.
CO6	Create a comprehensive strategy for incorporating ergogenic aids into an athlete's training program while considering ethical and legal considerations.

Unit No.	Course Content	No. of Hours
I.	Dietary Supplement Definition and classifications; Ergogenic aids: Definitions and Classifications Definition and regulations of Dietary Supplements (country-specific) Classification of Dietary/Nutritional Supplements Composition, Benefits and Applications of Nutritional Supplements Macronutrient Supplements: ● 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, Carbohydrate loading ● Fat EFAs, Glycerol, Omega-3 Fatty acids	**15**
II.	Micronutrient Supplements: ● Benefits/Mechanism of action and Applications ● Antioxidant vitamins & mineral supplements ● Vitamins: Ergogenic role of B-complex vitamins, Vitamin B12 & folic acid, Vitamin D supplements', Multivitamin supplements ● Mineral supplements: Calcium-Magnesium-, Iron supplements, supplements	**15**
III	Benefits/Mechanism of action and Applications of Herbal Supplements	**15**

	● Ergogenic Herbal supplements-: Antiinflammatory, Hormone modulators, adaptogens, performance enhancers- Ashwagandha, Rhodiola, Shilajit, Ginseng, Grape Seed extract, etc. ● Herbal Testosterone- boosters (e.g. Tribulus terrestris, Nettle root, Long jack root etc) ● Functional foods/phytochemicals- Green tea extract, Tart cherries, Caffeine, Curcumin, Phytosterols, Flavonoids, Beta-alanine, L-Carnitine ● Introduction to IPR (Intellectual property rights)	
IV	Meal replacement powders, Ready To Drink protein shakes (RTDs), Sports drinks & Sports gels, Electrolyte replacement drinks Use of Nutritional Supplements in Sport and Exercise: ● Motivational Antecedents and behavioural Outcomes: Motivational Theories Applied to Supplement Use ● FSDU, BSCG ● Behavioural Effects of Selected Supplements Commonly Employed for Performance, Fitness, and Health WADA - Anti-doping regulations and harmful effects of use of steroids & other banned substances	**15**
	Total Contact Hours	**60**

References:

Pfeiffer and Mangus's Concepts of Athletic Training. (2022). (n.p.): Jones & Bartlett Learning.

Halas, M. (2019). The Plant-Based Boost: Nutrition Solutions for Athletes and Fitness Enthusiasts. (n.p.): SuperKids Nutrition Incorporated.

Sport and Exercise Nutrition. (2011). Germany: Wiley.

Functional Foods : Sources and Health Benefits. (2017). (n.p.): Scientific Publishers.

Taylor & Francis, (2014).Antioxidants in Sport Nutrition. .

Goldberg, I 1994. Functional Foods: Designer Foods, Pharma foods, Nutraceuticals Chapman & Hall

Gibson, GR and William, CM. 2000. Functional foods - Concept to Product. Woodhead publishing.

Aluko, R.E. (2012). Functional Foods and Nutraceuticals. Springer

Taylor & Francis.(2015). Nutritional Supplements in Sport, Exercise and Health: An A-Z Guide

Geissler, C. (2010). Human Nutrition - E-Book. United Kingdom: Elsevier Health Sciences.

Manore, M. M., Meyer, N. L., Thompson, J. (2009). Sport Nutrition for Health and Performance. United Kingdom: Human Kinetics.

Evaluation:
4 credits (Total marks 100)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Assignment on Literature review with class discussion/ Class tests	20
Critical analysis/ Literature review/Preparation of learning resources (videos/ posters/brochures) on dietary supplements and functional food	20
Class participation and evaluation	10
Total	**50**
SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from Unit 3	10
Question 4 from Unit 4	10
Question 5 from multiple units	10
Total	**50**

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C4	Advanced Statistics in Home Science	**Theory**	**2**

Course Objectives:

1. To introduce students the crucial role of advanced/inferential statistics in quantitative research.
2. To enable students master the prerequisite concepts needed for the use of advanced/inferential statistics.
3. To enable in students the skills in selecting, computing, interpreting and reporting advanced statistics.
4. To facilitate students in learning how to run advanced statistical tests using SPSS.

Course Outcomes:

At the successful completion of the course:
CO1: Students will be able to explain each of the prerequisite concepts needed for the use of advanced/inferential statistics (e.g., sampling distribution, Type I and Type II errors, central limit theorem, standard error).
CO2: Students will be able to identify the types of variables needed for each advanced statistical test and the level of measurement of each selected variable, and also meet test assumptions, such that the advanced statistical test can be used in a suitable manner.
CO3: Students will be able to identify, differentiate between, evaluate, select, and use (compute, interpret and report test results for) different advanced statistical tests to compare and contrast phenomena.
CO4: Students will be able to identify, differentiate between, evaluate, select, and use (compute, interpret and report test results for) different advanced statistical tests to examine interrelationships between phenomena.
CO5: Students will have the necessary knowledge and skills to design and conduct explanatory research design studies.
CO6: Students will demonstrate working knowledge of the use of SPSS for selected advanced statistical tests.

Course Content		**Hours**
Unit I	**A. Prerequisite concepts needed for the use of advanced/inferential statistics** (i) Types of distribution Frequency distribution Normal distribution & departures from normality Probability distribution Sampling distribution (ii) Central limit theorem & normality of sampling distributions (iii) Test assumptions, & parametric and nonparametric methods (iv) Point estimation vs. interval estimation (v) Standard error (and confidence intervals) (vi) Null hypothesis vs. alternative hypotheses (vii) Significant vs. nonsignificant findings, Type I error vs. Type II error, Type I error and levels of significance **B. Using an advanced statistical method** (steps in using an advanced statistical method)	15
Unit II	**A. To study statistics that allows us to contrast phenomena** (a) Univariate chi-square test (b) Bivariate chi-square test (c) One sample t-test (d) t- or z- test for contrasting two independent groups (e) Paired t-test (f) one-way independent groups ANOVA & conceptualising other ANOVAs **4 B. To study statistics that allows us to examine relationships between variables** (a) Bivariate chi-square test (b) Product-moment correlation coefficient & conceptualising applications for simple linear regression **4 C. Ethics in the use of statistics** (e.g., the importance of test assumptions, the number of statistical tests in a research and levels of significance)	15

References:

Bhattacharyya, G.K., & Johnson, R.A. (1977). *Statistical concepts and methods*. John Wiley. (classic)

Jackson, S. L. (2012). *Research methods and statistics: A critical thinking approach* (4th ed.). Wadsworth Cengage Learning.

Johnson, R. A., & Bhattacharyya, G. K. (2019). *Statistics: Principles and methods* (8th ed.). John Wiley.

Martin, W. E., & Bridgmon, K. D. (2012). *Quantitative and statistical research methods*. Jossey-Bass.

Kachigan, S. K. (1986). *Statistical analysis: An interdisciplinary introduction to univariate & multivariate methods.* Radius Pr.

Kerlinger, F. N. & Lee, H. B. (2000). *Foundations of behavioral research.* Harcourt.

Wheelan, C. J. (2014). *Naked statistics: Stripping the dread from the data.* W.W. Norton.

Evaluation:

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written Short Quizzes (individually) & Problem-solving Exercises (in pairs or small groups)	5
Completion of an Add-On SPSS short-term course on using SPSS to compute the following advanced statistical tests and their nonparametric equivalents: univariate chi square, bivariate chi square, one sample t-test, t- or z-test of independent groups, paired t-test, one-way independent groups ANOVA, and correlation coefficient.	10
Practice Sums (individually), at least three for each of the following: standard error of the mean, univariate chi square, bivariate chi square, one sample t-test, t- or z-test of independent groups, paired t-test, one-way independent groups ANOVA, and correlation coefficient.	10
Total	25
SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from both units	5
Total	25

Semester II: Elective Courses

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C5E1A	Sports and Fitness Based Product Development	**Theory**	**2**

Course Objectives:

1. To understand the process of developing new food products using appropriate scientific methods.
2. To apply principles of food science and processing in the development of an innovative product that is nutritious utilizing indigenous foods, novel ingredients or food industry by-products.
3. To study and identify suitable packaging and storage conditions for the developed product.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcomes
CO1	Identify novel or indigenous ingredients for food product development for a sports person.
CO2	Outline the process of food product development
CO3	Apply the knowledge of food science and microbiology in selection of ingredients and food processing and preparation techniques for deriving palatable and nutritive products.
CO4	Compare variations of the recipe and identify the best product based on innovation, cost and sustainability.
CO5	Assess and evaluate the sensory quality, nutritional value, cost effectiveness of the products and other value additions in terms public health (nutrient density and improved shelf life)
CO6	Develop a nutritious product and creation of suitable flow of production/preparation techniques with good consumer acceptability as well as keeping quality and design strategies for its promotion.

Unit	Course Content	Periods
Unit I	**A. Process of new food product development for sports person** i. Process of idea generation and documentation: ● Market research of various new food products ● Idea generation ● Identification of ingredients (indigenous or novel) for food product development. ● Writing a proposal for development of food product with justification for its development ● Various sources for procurement of materials and ingredients ii. Standardization process of the product: ● Documentation of ingredients used (Weights and volumes) ● Method of preparation ● Variation in ingredients and technique of preparation. ● Measurement of recipe yield (Serving size, number of portions)	15
Unit II	**A. Evaluation and marketing of the developed product** i. Evaluation: ● Sensory evaluation (Trained and semi-trained panelist) ● Calculation of nutritive value (Indian Food Composition tables, USDA Food Database) ● Method of deriving cost ● Shelf-life study of the product ii. Packaging, labeling and marketing ● Packaging material (Types and suitability for food) and pre-requisite for a label content and design. ● Promotion and marketing techniques	15
	Total hours	30

References:

Developing Food Products for Consumers with Specific Dietary Needs. (2016). Netherlands: Elsevier Science.

Developing New Food Products for a Changing Marketplace. (2007). United States: CRC Press.

Fuller, G. W. (2016). New Food Product Development: From Concept to Marketplace, Third Edition. United States: CRC Press.

Jameson K. (1998). Food Science- A Laboratory Manual, New Jersey: Prentice Hall Inc.

McWilliam, M. (2001). Foods – Experimental Perspectives (4th Ed.), New Jersey: Prentice Hall Inc. Practices, Kluwer Academic/Plemer Publishers.USA: CRC Press Inc.

Weaver, C. (1996), Food Chemistry Laboratory – A manual for Experimental Foods.

Evaluation:

2 credits Total marks 50

CONTINUOUS INTERNAL EVALUATION:	Marks
Individual writing of the research proposal for development of new product, methodology, process of standardization and proposed budget	10
Swayam/ MOOC/ any online certification course conducted by qualified practitioner with submission of completion certificate	10
Class participation and evaluation	5
Total	25

SEMESTER-END EXAMINATION	Marks
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	25

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C5E1BP	Sports and Fitness Based Product Development	**Practical**	**2**

Course Objectives:

1. To apply principles of food science in the development of an innovative product.
2. To learn skills in developing nutritious products utilizing indigenous foods, novel ingredients or food industry by-products.
3. To identify and plan suitable packaging and storage conditions for the developed product.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

Course Outcome No.	Course Outcomes
CO1	Identify novel or indigenous ingredients for food product development for sports person
CO2	Outline the process of food product development
CO3	Apply the knowledge of food science and microbiology in selection of ingredients and food processing and preparation techniques for deriving palatable and nutritive products.
CO4	Compare variations of the recipe and identify the best product based on innovation, cost and sustainability.
CO5	Assess and evaluate the sensory quality, nutritional value, cost effectiveness of the products and other value additions (nutrient density and improved shelf life)
CO6	Develop a nutritious product and creation of suitable flow of production/preparation techniques with good consumer acceptability as well as keeping quality and design strategies for its promotion.

Unit	Course Content	Periods
Unit I	**A. Process of new food product development** **i. Ideation of the product:** ● Conduct market research of various new food products ● Idea generation - Identification of ingredients (indigenous or novel) for food product development. ● Writing a proposal for development of a food product with justification for its development and budget. **ii. Standardization of the product:** ● Documentation of ingredients used (Weights and volumes) ● Method of preparation ● Variation in ingredients and technique of preparation. ● Measurement of recipe yield (Serving size, number of portions)	30
Unit II	**B. Evaluation, packaging and marketing of developed product** **i. Evaluation of the product:** ● Sensory evaluation (Trained and semi-trained panellist) ● Calculation of nutritive value (Indian Food Composition tables, USDA Food Database) ● Calculating the cost ● Shelf-life study of the product **ii. Packaging, labeling and marketing:** ● Identification of suitable packaging material and designing a label (graphic design and content) ● Product promotion and marketing (Design marketing material)	30
	Total Hours	60

References:

Developing New Food Products for a Changing Marketplace. (2007). United States: CRC Press.

Fuller, G. W. (2016). New Food Product Development: From Concept to Marketplace, Third Edition. United States: CRC Press.

Jameson K. (1998). Food Science- A Laboratory Manual, New Jersey: Prentice Hall Inc.

McWilliam, M. (2001). Foods – Experimental Perspectives (4th Ed.), New Jersey: Prentice Hall Inc. Practices, Kluwer Academic/Plemer Publishers.USA: CRC Press Inc.

Weaver, C. (1996), Food Chemistry Laboratory – A manual for Experimental Foods.

Evaluation:

2 credits Total marks 50

CONTINUOUS INTERNAL EVALUATION:	Marks
Development of a new food product in groups (Writing the research proposal for development of new product, standardization, packaging, labeling, marketing and sales)	15
Journal	5
Class participation and evaluation	5
Total	25

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 Unit 1	10
Question 2 Unit 2	10
Question 3 Viva	5
Total	25

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C5E2A	Personal Training and Rehabilitation- Insights and Opportunities	**Theory**	**2**

Course Objectives-

1. Expose students to the field of personal training and rehabilitation.
2. Understand key terminologies in exercise and rehabilitation, to facilitate better communication with trainers and rehabilitation specialists.
3. Create a foundation for exercise science, to help students with parallel career options.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

Course Outcome No.	Course Outcomes
CO1	Recall foundational principles of exercise physiology and biomechanics relevant to personal training and rehabilitation.
CO2	Interpret client assessments, including medical history, fitness evaluations, and injury profiles, to develop personalized training and rehabilitation plans.
CO3	Implement proper techniques for injury prevention and rehabilitation exercises in real-world scenarios.
CO4	Analyze case studies and real-life scenarios to identify common challenges in personal training and rehabilitation practices.
CO5	Evaluate research studies in the field to inform best practices in personal training and rehabilitation.
CO6	Design innovative strategies and interventions to address emerging trends and challenges in personal training and rehabilitation practice.

Unit No.	Course Content	No. of Hours
I.	**Unit 1: Personal Training** **A. Introduction to Personal Training** • Definition and scope of personal training • Growth and business aspects of personal training • Professional standards, ethics and legal considerations **B. Basic Anatomy and Physiology for Personal Training** • Overview of human anatomy and physiology • Systems overview: Skeletal and Muscular • Systems overview: Cardiovascular and Respiratory **C. Principles of Exercise Programming** • Client Screening, Evaluation and Goal Setting • Energy systems and metabolism • Application of exercise physiology in creating training programs **D. Injury Prevention and Special Populations**	**15**

	• Common injuries in fitness and prevention strategies • Common Medical Conditions seen in clients • Modifications for adolescents, geriatric and other special population **E. Behaviour Modification and Communication** • Theories of Behavior Change • Increasing Adherence to Exercise • - Counseling and Coaching Techniques	
II.	**Unit 2: Rehabilitation** **A. Principles of Rehabilitation Intervention** • Introduction to Rehabilitation • Soft Tissue Injury, Repair, and Management • Joint, Connective Tissue, and Bone Disorders and Their Management • Surgical Interventions and Postoperative Management • Peripheral Nerve Disorders and Management **B. Schools of thoughts of Manual Therapy** • Maitland and Kaltenborn • Mulligan and Mckenzie • Neuro Dynamics • Muscle Energy Technique • Myofascial stretching • Cyriax **C. Rehab for Musculoskeletal Conditions** • Amputation, Fractures, Dislocations and Deformities • Infectious, Inflammatory and Degenerative conditions • Common Upper extremity conditions • Common Lower Extremity conditions • Common Spinal conditions **D. Sports Rehabilitation** • Pre-participation Examination • Common Musculoskeletal Injuries in Sports • Cardiopulmonary Conditions in Sports	**15**
	Total Contact Hours	**30**

References:

Brotzman, S. B., & Manske, R. C. (2011). *Clinical orthopaedic rehabilitation: An evidence-based approach* (3rd ed). Elsevier Mosby.

Brukner, P., & Khan, K. (2017). *Brukner & Khan's clinical sports medicine. Volume 1: Injuries* (B. Clarsen, J. Cook, A. Cools, K. Crossley, M. Hutchinson, P. McCrory, & R. Bahr, Eds.; 5th edition). McGraw-Hill Education (Australia).

Bryant, C. X., Jo, S., Dalleck, L., Gagliardi, C. S., & Green, D. J. (Eds.). (2020). *The exercise professional's guide to personal training: A client-centered approach to inspire active lifestyles*. American Council on Exercise.

Bushman, B. A., Battista, R., & American College of Sports Medicine (Eds.). (2014). *ACSM's resources for the personal trainer* (4th ed). Wolters Kluwer/Lippincott Williams & Wilkins Health.

Jacobs, P. L., & National Strength & Conditioning Association (U.S.) (Eds.). (2017). *NSCA's essentials of training special populations*. Human Kinetics.

Kisner, C., Colby, L. A., & Borstad, J. (2018). *Therapeutic exercise: Foundations and techniques* (Seventh edition). F.A. Davis Company.

Magee, D. J., & Manske, R. C. (2020). *Orthopedic physical assessment* (7th ed.). Elsevier, Inc.

O'Sullivan, S. B., Schmitz, T. J., & Fulk, G. D. (Eds.). (2019). *Physical rehabilitation* (Seventh edition). F.A. Davis Company.

Porter, S. B., & Tidy, N. M. (2013). *Tidy's physiotherapy* (15th ed). Elsevier.

Prentice, W. E. (Ed.). (2020). *Rehabilitation techniques for sports medicine and athletic training* (Seventh edition). SLACK Incorporated

Evaluation:
2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion/ class test	10
Swayam/ MOOC/ any online certification course conducted by qualified practitioner with submission of completion certificate	10
Class participation and evaluation	5
Total	**25**

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	25

M.Sc. (Home Science – Sports Nutrition)

(Under NEP)

Level – 6.0

Semester – II **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
SN02C5E2A	Personal Training and Rehabilitation- Insights and Opportunities	**Practical**	**2**

Course Objectives-

1. Expose students to the practical applications of personal training and rehabilitation.
2. Learn the different forms and techniques for exercises.
3. Understand nutritional requirements of rehabilitation patients.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

Course Outcome No.	Course Outcomes
CO1	Recall foundational principles of exercise physiology and biomechanics relevant to personal training and rehabilitation.
CO2	Interpret client assessments, including medical history, fitness evaluations, and injury profiles, to develop personalized training and rehabilitation plans.
CO3	Implement proper techniques for injury prevention and rehabilitation exercises in real-world scenarios.
CO4	Analyze case studies and real-life scenarios to identify common challenges in personal training and rehabilitation practices.
CO5	Evaluate research studies in the field to inform best practices in personal training and rehabilitation.
CO6	Design innovative strategies and interventions to address emerging trends and challenges in personal training and rehabilitation practice.

Unit No.	Course Content	No. of Hours
I.	**Unit 1: Personal Training** **A. Basics of Personal Training:** • Screening and Assessment • Creating an Exercise Plan • Monitoring and Data Collection **B. Exercise Demonstrations:** • Upper Body • Lower Body • Trunk **C. Gym Equipments:** • Cardio Equipment • Strength Training Equipment **D. Diet Planning for Gym Clients**	**15**

II.	**Unit 2: Rehabilitation** **A. Demonstration of Manual Therapy Techniques** • Maitland and Kaltenborn • Mulligan and Mckenzie • Neuro Dynamics • Muscle Energy Technique • Myofascial stretching • Cyriax **B. Demonstration of Rehab for Musculoskeletal Conditions** • Amputation, Fractures, Dislocations and Deformities • Infectious, Inflammatory and Degenerative conditions • Common Upper extremity conditions • Common Lower Extremity conditions • Common Spinal conditions **C. Diet Planning for Rehabilitation cases** **D. Exposure or inputs with new emerging technology**	
	Total Contact Hours	**30**

References:

Brotzman, S. B., & Manske, R. C. (2011). *Clinical orthopaedic rehabilitation: An evidence-based approach* (3rd ed). Elsevier Mosby.

Brukner, P., & Khan, K. (2017). *Brukner & Khan's clinical sports medicine. Volume 1: Injuries* (B. Clarsen, J. Cook, A. Cools, K. Crossley, M. Hutchinson, P. McCrory, & R. Bahr, Eds.; 5th edition). McGraw-Hill Education (Australia).

Bryant, C. X., Jo, S., Dalleck, L., Gagliardi, C. S., & Green, D. J. (Eds.). (2020). *The exercise professional's guide to personal training: A client-centered approach to inspire active lifestyles*. American Council on Exercise.

Burke, L., & Deakin, V. (2015). *Clinical sports nutrition* (Fifth Edition). McGraw Hill Education.

Bushman, B. A., Battista, R., & American College of Sports Medicine (Eds.). (2014). *ACSM's resources for the personal trainer* (4th ed). Wolters Kluwer/Lippincott Williams & Wilkins Health.

Jacobs, P. L., & National Strength & Conditioning Association (U.S.) (Eds.). (2017). *NSCA's essentials of training special populations*. Human Kinetics.

Kisner, C., Colby, L. A., & Borstad, J. (2018). *Therapeutic exercise: Foundations and techniques* (Seventh edition). F.A. Davis Company.

Magee, D. J., & Manske, R. C. (2020). *Orthopedic physical assessment* (7th ed.). Elsevier, Inc.

O'Sullivan, S. B., Schmitz, T. J., & Fulk, G. D. (Eds.). (2019). *Physical rehabilitation* (Seventh edition). F.A. Davis Company.

Porter, S. B., & Tidy, N. M. (2013). *Tidy's physiotherapy* (15th ed). Elsevier.

Prentice, W. E. (Ed.). (2020). *Rehabilitation techniques for sports medicine and athletic training* (Seventh edition). SLACK Incorporated.

Evaluation:
2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Method of work, precision and use of various skills while performing the practicals, Class participation and evaluation	10
Diet planning for gym goers and rehabilitation clients	10
Journal	5
Total	25

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1: Unit 1	10
Question 2: Unit 2	10
Question 3 Viva	5
Total	25

Semester-II:
On the Job Training/Field Project

M.Sc. (Home Science – Sports Nutrition)
(Under NEP)
Level – 6.0

Semester- II Type of Course**: OJT/ FP**

Course Code	Course Title	Th/Pr	Credits	Hours
SN02C6	**On Job Training/Field Project**	**Practical**	**4**	**120**

Course Objectives:

1. To introduce students to Sports Nutrition related agency/organization and understand the nature of work offered.
2. To enhance subject related knowledge base development and learn to apply theoretical learnings on field.
3. To develop ethics and skill-sets required to be a Sports Nutritionist.
4. To develop a creative/innovative and entrepreneurial mind-set through working in and observing the organisation.
5. To become well versed in positive group dynamics and learn strategies for effective team work, leadership development and responsibility completion.

Course Outcomes (CO):

On successful completion of the course, the student will be able to:

CO No.	Course Outcome
CO 1	Identify different agencies/organizations related to Sports Nutrition catering to athletes of different sports.
CO 2	Enhance knowledge of the subject and be able to apply theories of Sports Nutrition in the professional space
CO 3	Develop and demonstrate skill-sets and ethics expected out of a Sports Nutritionist.
CO 4	Apply creative, innovative and /or entrepreneurial concepts into professional practical settings
CO 5	Work effectively in teams with collaboration and responsibility.

Content of OJT:

1. **Understanding the Vision, Mission, and Goals of the Organization**

- Organizational Aspects: Familiarize oneself with the organogram, hierarchy, chain of command, and overall organizational structure.
- Roles and Responsibilities: Understand the specific roles and responsibilities of employees in the Sports Nutrition Department.
- Acquaintance with Human Resource and Resource Management Policies (specifically with Sports Nutrition) management, inventory control, standard operating procedures and any other services offered.
- HR Policies: Comprehend policies related to human resource management, ensuring a thorough understanding of employee rights and responsibilities.
- Inventory Control and SOPs: Learn the intricacies of inventory control, standard operating procedures, and other services offered within the department.

2. **Aspects related to increasing the existing knowledge and skills; and specialised training to gain expertise in specific aspects in the field of Sports Nutrition.**

3. Hands-On Training and Skill Development

- Equipment Use: Gain hands-on experience with equipment and tools related to the area of Sports Nutrition – nutritional assessment such as body composition analysis; workflow process and counselling software.
- Digital Media, Communication & Technology Application: Understand the application of technology – mechanical/AI/Robotics in nutritional assessment and diagnosis; utilizing relevant tools, equipment, and interpretation software.
- Hands-On Projects and Case Studies: (One or more as applicable)
    - Diet Planning and Management: Apply tools and methods for diet assessment, planning and managing as per athletes requirement
    - Counseling Experience: Engage in counseling sessions
    - Action research in: Performance improvement, injury prevention and recovery Communication.
    - Content Development for consumer/patient awareness and education in print, voice or digital formats

4. Development of Interpersonal Skills and Leadership

- Participation in Organizational Activities
- Teamwork: Collaborate with organizational teams on existing or new projects, fostering interpersonal skills and leadership qualities.
- Learning to work for consumer/ client satisfaction/ management
- Community and Social Engagement: Plan and execute community and social engagement projects related to Sports Nutrition.

5. Inculcation of a mind-set of Research, Creativity, Innovation, and Entrepreneurship (One or more as applicable)

- Make a study of the organisation's initiatives in research, creativity, innovation and entrepreneurship.
- Nutrition Communication Resources: Create communication resources, prototypes, or models to convey nutritional information effectively.
- Entrepreneurial Venture: Develop a feasible product or service for entrepreneurial ventures, emphasizing unique features and feasibility, addressing specific needs and problems in the relevant field.
- Case Studies and Project Work: Prepare and present case study reports or work on a research project aligned with industry needs.

Process Outline:

1. Preparation:

- Identifying the age and target group the student wants to work for; contacting different Sports Nutrition agencies/organisations catering to them and co-ordinating with staff in-charge to get approval and seek permission with the organisation.
- Procuring job profile and assisting the employer with tasks assigned within the framework of their job profile.
- Maintaining comprehensive observations/records of tasks accomplished.
- Making a self-reflection report at the end of every week.

2. Enhancing Practical Skills through OJT:

- The On-the-Job Training (OJT) program spans 4-6 weeks, requiring a minimum of 120 hours of physical presence at the organization.
- Students are expected to find their own OJT placements, although the institution provides support and guidance in securing positions with reputable organizations.
- OJT must be conducted outside the home institution to expose students to real-world work environments.
- OJT covers any subject within the syllabus, allowing students to align their experience with their academic interests.
- In recognition of changing dynamics, some OJT sessions can be conducted online to accommodate virtual work environments.
- OJT will offer students the opportunity to apply classroom learning in a real-world setting, fostering the development of technical and non-technical skills.
- Mutual Benefits: Organizations gain insights into the program's curriculum and industry requirements, enabling them to provide constructive feedback and enhance course relevance.
- OJT bridges the gap between theoretical knowledge and practical application, preparing students for successful careers in Sports Nutrition

3. Interning Organizations:

Students have the flexibility to pursue their OJT in various types of organizations, including but not limited to:

- Sports Nutrition organizations working with sustainability concepts
- Governmental and non-governmental organizations pertaining to Sports Nutrition
- Diet departments in gyms
- Nutrition Clinics catering to the athletes
- Entrepreneurs
- Global online internship programmes

4. Role of OJT Mentors:

- To enhance the learning experience and ensure the quality of the MSc programme, each student participating in the OJT will be assigned two mentors:

i. A faculty mentor from the institution
ii. An industry mentor from the organization where the student is interning.

- By having both an industry mentor and a faculty mentor, students benefit from a comprehensive guidance system that combines industry expertise and academic support.

5. Role of Industry Mentor:

The industry mentor plays a crucial role in:

- Guiding the student during the internship.
- Ensuring that the intern fulfils the requirements of the organization and successfully meets the demands of the assigned project.
- Providing valuable insights into real-work practices and industry expectations through their expertise and experience.

6. Role of Faculty Mentor:

The faculty mentor serves as the overall coordinator of the OJT program.

- Oversee the entire internship process.
- Evaluate the quality of the OJT in a consistent manner across all students.
- Ensures that the OJT aligns with the programme objectives by providing valuable learning opportunities.
- Facilitates communication between the institution, industry mentor, and student ensuring a fruitful OJT experience.

7. Submission of Documentation for OJT

The student will make two documents as part of the OJT:

a. Online Diary: This ensures that the student updates daily activity, which could be accessed by both the mentors. Daily entry can be of 3- 4 sentences giving a very brief account of the learning/activities/interaction taken place. The faculty mentor will be monitoring the entries in the diary regularly.

b. OJT Report: A student is expected to make a report based on the OJT he or she has done in an organization. It should contain the following:

✓ **Certificate:** A certificate in the prescribed Performa from the organization where the OJT was done.

✓ **Title:** A suitable title giving the idea about what work the student has performed during the OJT.

✓ **Description of the organization:** A small description of the organization where the student has interned.

o Description of the activities done by the section where the intern has worked: A description of the section or cell of the organization where the intern worked. This should give an idea about the type of activity a new employee is expected to do in that section of the organization.

o Description of work allotted and done by the intern: A detailed description of the work allotted, and actual work performed by the intern during the OJT (Online/In Person/Onsite) period. It shall be the condensed and structured version of the daily report mentioned in the online diary.

✓ **Self-assessment:** A self-assessment by the intern on what he or she has learned during the OJT period. It shall contain both technical as well as interpersonal skills learned in the process.

8. Interaction between mentors:

- To ensure the smooth conduct of the OJT a meet-up involving the intern, industry mentor, and the faculty mentor will be scheduled as a mid-term review.
- The meeting can preferably be online to save time and resources.
- The meeting ensures the synergy between all stakeholders of the OJT.
- A typical meeting can be of around 15 minutes where at the initial stage the intern brief about the work and interaction goes for about 10 minutes.
- This can be followed by the interaction of the mentors in the absence of the intern. This ensures that issues between the intern and the organization, if any, are resolved.

9. OJT Workload for the Faculty: Every student is provided with a faculty member as a mentor. So, a faculty mentor will have a few students under him/her. A faculty mentor is the overall in charge of the OJT of the student. He/she constantly monitors the progress of the OJT by regularly overseeing the diary, interacting with the industry mentor, and guiding on the report writing etc. Considering the time and effort involved, a faculty mentor who is in-charge of 10-12 students shall be provided by a workload of 3 hours.

Evaluation:
4 credits (Total marks 100)

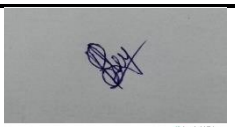
CONTINUOUS INTERNAL EVALUATION:	**Marks**
Online Diary	25
Mid-term interaction and case study presentation	25
Total	**50**

EXTERNAL EVALUATION:	**Marks**
OJT Documentation	25
Case Study Presentation	10
OJT Viva	15
Total	**50**

Letter Grades and Grade Points

Semester GPA/Program CGPA Semester/ Program	% of Marks	Alpha-Sign/ Letter Grade Result
9.00-10.00	90.0-100	O (Outstanding)
8.00-<9.00	80.0-<90.0	A+ (Excellent)
7.00-<8.00	70.0-<80.0	A (Very Good)
6.00-<7.00	60.0-<70	B+ (Good)
5.50-<6.00	55.0-<60.0	B (Above Average)
5.00-<5.50	50.0-<55.0	C (Average)
4.00-<5.00	40.0-<50.0	P (Pass)
Below 4.00	Below 40	F (Fail)
Ab (Absent)		Absent

Team for Creation of Syllabus

Name	College Name	Signature
Dr. Vishakha Karnard I/C Principal	College of Home Science Nirmala Niketan	
Mrs. Vibha Hasija Head of the Department	College of Home Science Nirmala Niketan	
Dr. Sheetal Joshi Assistant Professor	College of Home Science Nirmala Niketan	
Ms. Protity Shuvra Dey Assistant Professor (Temporary: Self-financed Faculty)	College of Home Science Nirmala Niketan	

Sign of Head of the Institute

Sign of Dean

Name of the Head of the Institute with Designation
Prof. Dr. Vishaka Ashish Karnad
I/C Principal &
Chairperson Board of Studies
Home Science

Name of the Dean

Name of the Faculty

Name of Department
Foods, Nutrition and Dietetics

Appendix B

Justification for M.Sc. (Home Science) - Sports Nutrition

	Necessity for starting thecourse:	The M.Sc. Programme in Sports Nutrition can offer several important benefits to both students and the field of sports science. Sports nutrition is a highly specialized field that involves understanding the unique dietary needs of athletes andactive individuals. This program would provide in-depth knowledge about the physiological and nutritional requirementsof athletes, which can be critical for optimizing performance, recovery, and overall health. Moreover, it would also equip students with the knowledge and skills to develop personalizednutrition plans tailored to different sports, training regimens, and individual athlete characteristics. Sports nutrition is a dynamic field with ongoing research and evolving trends. A Master's program would ensure that students areexposed to the latest scientific advancements and practical applications in sports nutrition, enabling them to make informed decisions based on evidence-based practices. The M.Sc. of Home Science in Sports Nutrition Program has been meticulously designed following the guidelines of the National Education Policy (NEP). It offers a well-balanced blend of academic knowledge and hands-on application, ensuring students receive thorough disciplinary training while also encouraging a cross-disciplinary approach. The curriculumincludes compulsory courses that provide learners with a broad foundation in sports nutrition, while optional courses and practical components focus on cultivating crucial skills and enhancing employability. The multifaceted nature of sports nutrition encompassing areas such as exercise physiology, biochemistry, and dietary planningto enhance sports performance calls for a comprehensive academic programme that equips students with deep knowledgeand practical skills. A M.Sc. Degree would empower professionals to address the unique dietary requirements of athletes, aiding in performance enhancement, injury prevention and post recovery nutrition. A Master's programme would not only enhance employability but also open doors to diverse career paths. The postgraduates could position themselves at the forefront ofa burgeoning field, where evidence based dietary strategies playa pivotal role in shaping the future of the sports and fitness industry.
2.	Whether the UGC has recommended the course:	YES
3.	Whether all the courses	Master's Course (Home Science) in Sports Nutrition shall

	have commenced from the academic year 2023-2024:	commence from the academic year 2023-2024. Semester I and Semester II shall commence from the academicyear 2023-2024. Semester III and Semester IV shall commence from the academicyear 2024-2025.
4.	The courses started bythe University are self-financed, whether adequate number of eligible permanent faculties are available?	The course is SELF-FINANCED. Adequate Eligible faculties are recruited each year.
5.	To give details regardingthe duration of the Course and is it possible to compress the course?	Two Years Full Time (Four Semesters) It is NOT possible to compress the course.
6.	The intake capacity of each course and no. of admissions given in the current academic year:	Intake Capacity: 20 Number of admissions given in the current academic year:Ongoing
7.	Opportunities of Employability/ Employment availableafter undertaking thesecourses:	With the growing interest in fitness, wellness, and sports performance, there is an increasing demand for professionals whoare well-versed in sports nutrition. Postgraduates can thrive as sports nutritionists, working with professional teams, athletes and fitness enthusiasts to optimize performance. Roles in sports academies, health and fitness clubs and wellness centers are manifold as is aiding individuals in achieving their fitness goals. Opportunities exist to branching out into research and therapeutic sports product development and marketing for sports nutrition brands. Overall, the M.Sc. in SportsNutrition equips the learner with skills to tap into a wide range of employment within the dynamic and evolving sports and fitness industry.

Sign of Head of the Institute

Sign of Dean

Name of the Head of the Institute with Designation
Prof. Dr. Vishaka Ashish Karnad
I/C Principal &
Chairperson Board of Studies
Home Science

Name of the Dean

Name of the Faculty

Name of Department
Foods, Nutrition and Dietetics