

**MANONMANIAM SUNDARANAR UNIVERSITY  
TIRUNELVELI**

**PG - COURSES – AFFILIATED COLLEGES**

Course Structure for M.Sc. .Nutrition & Dietetics with Hospitality Management  
(Choice Based Credit System)

(with effect from the academic year 2017- 2018 onwards )

<b>Se m. ( 1)</b>	<b>Sub. No. (2)</b>	<b>Subject Status (3)</b>	<b>Subject Title (4)</b>	<b>L (5)</b>	<b>T (6)</b>	<b>P (7)</b>	<b>C (8)</b>
III	14	Core - 14	Food Microbiology and sanitation	4	2	0	4
	15	Core - 15	Biochemical Changes in Diseases	4	2	0	4
	16	Core - 16	Principles of Business organization and accounting	4	1	0	4
	17	Core - 17	Research Methodology	4	1	0	4
	18	Core - 18 Practical - 5	Food Microbiology and Sanitation	0	0	4	2
	19	Core - 19 Practical - 6	Biochemical changes in Diseases	0	0	4	2
	<b>Subtotal</b>				<b>22</b>		<b>8</b>
IV	20	Core - 20	Food Processing and Preservation	4	0	0	4
	21	Core - 21	Nutrition for Fitness	4	0	0	4
	22	Core - 22	Human Factors and Ergonomics	4	0	0	4
	23	Core - 23 Practical - 7	Food Processing and Preservation	0	0	4	2
	24	Core - 24 Practical - 8	Internship Training	0	0	4	2
	25	Elective - 1	Elective / Field Work / Study Tour	0	0	3+	3
	26	Core - 25	Project (Individual)	0	0	7+	8
	<b>Subtotal</b>				<b>12</b>		<b>30</b>
<b>Total</b>				<b>134</b>			<b>90</b>

**FOOD MICROBIOLOGY AND SANITATION**

**L T P C**

**Objectives**

**4 2 0 4**

1. Understand the common organisms associated with food borne illness.
2. Gain knowledge on the necessity for cleanliness in preparation and service of foods.

**UNIT -I**

**Sterilization**

- a. Physical agents – Lights, Desiccation, Electricity and Heat.
- b. Chemical agents- removal of microorganisms and filtration
- c. Water-Sources of bacteriology of water supplies, Bacteriological examination, Purification.

**( 14 L + 6T)**

**UNIT - II**

**Microbiology of Fruits and Vegetables :**

External contamination preservation and spoilage of fruits, contamination and control of microorganism in vegetables.

**( 12 L + 6 T )**

**UNIT – III**

**Microbiology of Milk and Milk Products:**

- a. Kinds of microorganism in milk
- b. Sources of contamination pathogens in milk
- c. Control of Microorganism
- d. Quality and methods of study
- e. Microbiology of dairy products-fermented milk, butter and cheese

**( 14 L + 6T)**

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Semester III /Ppr.No. 14 / Core 14**

**UNIT –IV**

**Microbiology of Cereal and Cereal Products**

- a. Organism associated with grains
- b. Classification and control of molds in bread **(10L + 6T)**

**UNIT –V**

**Microbiology of Flesh Foods**

Microbiology of poultry, fish and meat products **( 10L+6T)**

**UNIT –V**

**Microbiology of Flesh Foods**

Microbiology of poultry, fish and meat products **( 12L+6T)**

**Reference**

1. Frazier, W.C. and Westhof, D.C., Food Microbiology, Tata MC Graw Hill Publishing Company Limited, 1993.
2. Johns, N Managing Food Hygiene, Mc Millan press Ltd., 1995.
3. Longree, K., Quantity Food sanitation, Inter Science Publishers, New York, 1955.
4. Joshua, A., Microbiology, Popular book depot publishers, New York, 1995.
5. Adams, M.R., Moss, M.O., Food Microbiology, New Age International (P) Limited Publishers, 1996.
6. Rodey, S., Hygiene and Sanitation in food Industry, Tata McGraw Hill Publishing Company Limited, New Delhi, 1999.
7. Kumar, H.D, Kumar, S., Modern concepts of Microbiology, Vikas publishing House Pvt. Limited, 1999.

**BIOCHEMICAL CHANGES IN DISEASES**

**Objectives:**

**L T P C**

1. To study different tests for diseases **4 2 0 4**
2. To know the biochemical composition of bloods and different parts of the body

**UNIT- I**

**Blood Sugar**

Level of blood glucose in normal and abnormal conditions- Ketosis – Diabetic coma.

**(12L+6T)**

**UNIT-II**

**Inborn Errors of carbohydrate metabolism**

Pentosuria, Galactosemia Glucose Urea, Glycogen storage disease, Glucose tolerance test

**( 14L+6T)**

**UNIT- III**

**Blood Lipids**

Types and level of lipids in blood disorder of lipoproteins – Hyper and Hypocholesteremia, Atherosclerosis, Inborn errors of fat metabolism

**( 10 L+6T)**

**UNIT – IV**

**Plasma protein:**

Plasma –types- functions – inborn errors of amino acid metabolism- phenylketonuria  
Albinism - Alkaptonuria and maple syrup disease. **( 10 L+6T)**

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Semester III /Ppr.No. 15 / Core 15**

**UNIT – V**

**Gastric Disorders:**

Bile salt- Functions – formation of bile acids and bile salts – bile pigments from haemoglobin. Test for kidney function –clearance test. ( 14L+6T)

**References :**

1. Cantrow A and Trumper, Clinical Bio-Chemistry, M.W.B. Saunders co-1975.
2. Swaminathan, M. Bio-Chemistry for Medical teachers. BAPPCO publishers, Bangalore. 2001.
3. Reghuramulu, N. Nair, K.M., Kalyanasundaram, S.A., Manual of laboratory Techniques, National Institute of Nutrition, ICMR, Silver Prints, Hyderabad. 2nd ed. 2003.
4. Hoffman, W.W., The Biochemistry of Clinical Medicine, 4th Edition, Year Book Medical Publishers, 1970.
5. Varley H. Gowenlock. A. H. and Bell M. Practical clinical biochemistry. William Heinemann medical books limited. Vol. 1. 5th Ed., 1980.
6. Sadasivam, S. and Manickam, A., Biochemical Methods, New Age International Pvt. Ltd., Publishers, II edition, New Delhi. 1996.
7. Jayaraman, J. Laboratory Manual in Biochemistry, New Age International Ltd., Publishers, V Print. New Delhi. 1996.
8. Bhavana Sabarwal, Principles and Practices of Dietetics, Ajay Verma Common Wealth Publishers, New Delhi. 1999.

**PRINCIPLES OF BUSINESS ORGANIZATION AND ACCOUNTING**

**Objectives**

**L T P C**

**4 1 0 4**

1. Understand the legal formalities of starting various types of business organization.
2. Gain knowledge on the various sources of finance.

**UNIT- I**

**Scope of Business:**

- a. Objects of modern business Essential of a successful business
  - b. Forms of Business Organization
  - c. Type of companies - Sole proprietorship, partnership, Joint Stock Company.
  - d. Important documents of companies, State enterprises
- ( 12 L+ 3T)

**UNIT- II**

**Sources of Finance and Principles of Accounting**

- a. Important Finance - sources of company finance, source of long term and short term finance.
  - b. Kinds of shares, Debentures - Ploughing back of profits.
  - c. Role of banks and other financial institutions
  - d. Journal and ledger
  - e. Trial balance, preparation of cash book, subsidiary books.
- ( 10L+3T)

**UNIT –III**

**Marketing, Sales Promotion and Cost Control**

- a. Channels of Distribution
  - b. Importance of middlemen in trade, Wholesale and retail trade with reference
  - c. Salesmanship and advertisement
  - d. Methods of controlling cost, Types of Cost, Cost Sheet
- (10 L+3T)

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Semester III /Ppr.No. 16 / Core 16**

**UNIT- IV**

**Small Scale Industry:**

- a. Need for Management problems of small
- b. Government policy towards small business
- c. Development schemes
- d. Registration of Industrial estates - Objectives – Advantages ( 15L+3T)

**UNIT - V**

**Preparation of Final Accounts:**

- a. Preparation of Trading A/C, Profit and Loss Account, Balance Sheet - Simple adjustments. (10L+3T)

**Reference:**

1. N. Mani, P.L. and Nagarajan, K.L.I., Principles of Accounting, Himalaya Publications, New Delhi 2003.
2. Reddy, T.S., Murthy. A, Financial Accounting, Margham Publications, Chennai, 2003.
3. Jain, S.P., and Narang, M., Financial Accounting Kalyani Publishers, Ludhina, 2003.
4. Jain, S.P., and Narang, K.I., Cost Accounting Kalyani Publishers, Ludhina, 2003.
5. Reddy, P.N., Gulshan, Principles of Business Organisation and Management, Eurasia Publishing House, New Delhi, 2003.
6. Bhusan, Y.K, Fundamentals of Business Organisation and Management, Sultan Chand and Sons, New Delhi, 2003.

## RESEARCH METHODOLOGY

### Objectives:

L T P C

4 1 0 4

1. Understand the methodology of research and techniques
2. Develop skills in conducting research from planning a study to report Writing
3. Apply statistical procedure to analyze numerical data draw inferences

### Unit I

#### Methods of Research

- a) Definition of research, characteristics of research, criteria of good research
- b) Merits and demerits of scientific research
- c) Different types of research and characteristics:
  - i) Historical research, Ex-post facto research, laboratory experiments, Field experiments, survey research, evaluative research, Case study research, operational research, participatory research
  - ii) Steps in conducting research
  - iii) Hypothesis: Definition, purpose, types
  - iv) Reporting: Methods of reporting, Technical reports
  - v) Research Abstract: Definition, guidelines for writing abstract
  - vi) Thesis: Definition, parts, steps in writing thesis

(12L+3T)

### Unit II

#### Sampling Design

- a) Census and sample survey- Steps in sampling design, Sample size and its Determination



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Semester III /Ppr.No. 17 / Core 17**

- b) Types of sampling: Random Sampling, Simple random sampling, Stratified random sampling, Systematic sampling, Cluster sampling
- c) Non random sampling methods:
  - i. Judgement sampling
  - ii. Convenience sampling, quota sampling
  - iii. Benefits of sampling
  - iv. Sampling errors
  - v. Non sampling errors **(10L+3T)**

**Unit III**

**Methods of Data Collection and Classification**

- a) Methods of collecting primary data: Questionnaire, Interview, Schedule, Observation, Inventories, Checklists
- b) Scaling techniques
- c) Drafting of questionnaire, training of interviewers
- d) Criteria for evaluation of instruments – reliability and validity
- e) Sources of secondary data, precautions in the use of secondary data
- f) Classification of data: types of classification
- g) Formation of discrete and continuous probability distributions
- h) Tabulation of data: parts of a table, general rules of tabulation, types of tables
- i) Diagrammatic representation of data
- j) Graphic representation of data **(10L+3T)**

**Unit IV**

**Statistical Methods**

- a) Measures of central tendency: mean, median and mode, their relative advantages and disadvantages
- b) Measures of dispersion: Mean deviation, standard deviation, Coefficient of variation, percentile

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Semester III /Ppr.No. 17 / Core 17**

- c) Types of correlation, coefficient of correlation and its interpretation-Rank correlation, Regression equations and predictions, Analysis of variance, Contingency tables, Chi-square test, 't' test: student's 't' test, paired 't' test, unpaired 't' test, 'F' test **(15L+3T)**

**Unit V**

**Sampling Statistics and Introduction to Statistical Package for Social Sciences (SPSS)**

- a) Statistical inference and central limit theorem  
b) Null hypothesis and tests of significance  
c) The chi-square  
d) Testing difference between mean, proportions, standard deviations and correlations.  
e) Introduction to Statistical Package for Social Sciences (SPSS). **(13L+3T)**

**References**

1. Bailey, Kenneth D., "Methods of Social Research," New York, 1978.
2. Best, John W., and Kahn, James V., "Research in Education," 5th Ed., New Delhi: Prentice-Hall of India Pvt. Ltd., 1986.
3. Cochran, W.G., Sampling Techniques, 2nd ed. New York: John Wiley & Sons., 1963.
4. Cooley, William W., and Lohnes, Paul R., Multivariate Data Analysis, New York: John Wiley & Sons., 1971.
5. Gatner, Elliot S.M., and Cordasco, Francesco, Research and Report Writing, New York: Barnes & Noble, Inc., 1986.
6. Gaum, Carl G., Graves, Harold F., and Hoffman, Lyne, S.S., Report Writing, 3rd ed., New York: Prentice-Hall, 1980.
7. Ghosh, B.N., Scientific Methods and Social Research, New Delhi: Sterling Publishers Pvt. Ltd., 1982.
8. Kothari, C.R., Quantitative Techniques, 2nd ed., New Delhi: Vikas Publishing House Pvt. Ltd., 1984.

**MSU/2017-18/PG colleges/ (M.Sc. Nutrition & Dietetics with Hospitality Management)  
Semester III /Ppr.No. 17 / Core 17**

9. Whitney, F.L., The Elements of Research, 3rd ed., New York: Prentice-Hall, 1950.
10. Kothari, C.R., Research Methodology: Methods and Techniques, 2nd ed., New Age International (P) Ltd., Publishers. 2004.

**FOOD MICROBIOLOGY AND SANITATION**

**Objectives:**

**L T P C  
0 0 4 2**

1. To instruct students who are having their first experience with microbiology on the nature of micro organisms
2. To outline the source of contamination and their aspects of foods
3. To understand the principles of food preservation
4. To gain knowledge of the methods to prevent contamination.

**PRACTICAL**

1. Visit to water plant to observe methods of purification.
2. Microbial examination of fruits – surface washing.
3. Determination of quality of milk.
4. Identify types of microorganisms in cereal and cereal products.
5. Microbial examination of fleshy foods surface washing.
6. Visit to water plant to observe methods of sewage treatment

**Reference**

1. Frazier, W.C. and Westhof, D.C., Food Microbiology, Tata MC Graw Hill Publishing Company Limited, 1993.
2. Johns, N Managing Food Hygiene, Mc Millan press Ltd., 1995.
3. Longree, K., Quantity Food sanitation, Inter Science Publishers, New York, 1955.
4. Joshua, A., Microbiology, Popular book depot publishers, New York, 1995.
5. Adams, M.R., Moss, M.O., Food Microbiology, New Age International (P) Limited Publishers, 1996.
6. Rodey, S., Hygiene and Sanitation in food Industry, Tata McGraw Hill Publishing Company Limited, New Delhi, 1999.
7. Kumar, H.D, Kumar, S., Modern concepts of Microbiology, Vikas publishing House Pvt. Limited, 1999.

**BIOCHEMICAL CHANGES IN DISEASES**

**L T P C**

**Objectives:**

**0 0 4 2**

1. To study different tests for diseases
2. To know the biochemical composition of bloods and different parts of the body

**INDIVIDUAL EXPERIMENTS**

**ANALYSIS THE BLOOD**

- a. Glucose
- b. Hemoglobin
- c. Total Cholesterol
- d. Lipoprotein factors
- e. Serum A/C ratio and total protein
- f. Serum phospholipids
- g. Serum Vitamin - A
- h. Serum alkaline phosphatase
- i. Serum Glutamate Oxaloacetate transaminase
- j. Serum glutamate pyruvate
- k. Serum Bilirubin

**II. ANALYSIS OF URINE**

- a. Creatinine
- b. Urea
- c. Total nitrogen - albumin
- d. Calcium
- e. Phosphorus

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Semester III /Ppr.No. 19 / Practical – 6**

f. Vitamin C

**III DEMONSTRATION EXPERIMENTS**

Analysis of food for

- a. Dietary fiber
- b. Sodium
- c. Potassium

**FOOD PROCESSING AND PRESERVATION**

**Objectives**

**L T P C**

- |    |   |          |          |          |          |
|----|---|----------|----------|----------|----------|
| 1. | To understand the principle of food preservation.   | <b>4</b> | <b>0</b> | <b>0</b> | <b>4</b> |
| 2. | To develop skills for setting small scale industry. |          |          |          |          |

**UNIT I**

Aims and principles of Food preservation, traditional methods of food preservation. ( 12L)

**UNIT-II**

- a) Milk and Milk products - processing methods and product preparations.
- b) Processing of meat, poultry, seafood and egg. ( 12L)

**UNIT- III**

Heat processing of food – dehydration, pasteurization, smoking, microwave heating and canning - methods and its applications. (12L)

**UNIT- IV**

- a) Cold processing – chilling, freezing, freeze drying - methods and its applications.
- b) Chemical methods of food preservation- Preservatives, anti-oxidants, sequesterents and stabilizers (12L)

**UNIT-V**

- a) Use of radiation technology.
- b) Food concentrates - use of acid, sugar and salt - methods and its applications. ( 12L)

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Semester IV /Ppr.No. 20 / Core -20**

**Reference**

1. Dexrosier, N.W. The Technology of Food Preservation, CBS Publisher and Distributors, New Delhi. 1987.
2. .Lal and Siddappa. Fruit and Vegetable preservation. ICMR. 1986.
3. Luh and Woodroof, Commercial Vegetable Processing. The AVI Publishing Company, INC, Westport. 1975.
4. Ranganna, S. Handbook of Analysis and quality control for fruit and vegetable processing, 2nd Edn., Tata McGraw-Hill Publisher company Ltd., New Delhi. 1986.
5. Arhold Spicer.. Advances in pre concentration and dehydration of Foods. Applied Science Publishers Pvt.Ltd. 1974
6. Charm, S.E. Fundamentals of Food Engineering. The AVI Publishing Co., Connecticut. 1971.
7. Booth, I. R., Kroll, R. G. The preservation of foods by low pH. In: Mechanisms of Action of Food Preservation Procedures. Gould, G. W., Ed. Elsevier Applied Science, London. p. 119. 1989.
8. Borgstrom, G. Principles of Food Science. Macmillan, London. 1968



**MSU/2017-18/PG colleges/ (M.Sc. Nutrition & Dietetics with Hospitality Management)  
Semester IV /Ppr.No. 21 / Core -21**

**NUTRITION FOR FITNESS**

**Objectives:**

**L T P C**

**4 0 0 4**

1. To learn various asanas for the well-being of sound health
2. To understand the types and role of meditation

**Unit I**

**Introduction to Yoga**

Yoga- Meaning, Aims and objectives, significance.

**(10L)**

**Unit II**

**Asanas**

- a) Systems of Yoga - Eight limbs of yoga.
- b) Asanas - Classification, difference between physical exercise and yogic exercise
- c) Guidelines for practicing Asanas. **(14L)**

**Unit III**

**Meditation**

Meditation - Meaning, types, role

**(14L)**

**Unit IV**

**Body Care**

- a. Facial and body - fruit and vegetables, Electrical treatment
- b. Machinery and technology - figure analysis - recommended treatment eg : muscle toning, fat elimination, relaxation and detoxification. **(12L)**

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Semester IV /Ppr.No. 21 / Core -21**

**Unit V**

**Treatment for Fitness**

- a. Exercise and Weight control - fundamentals of aerobics
- b. Nutrition guidance on balanced eating and nutritional advice to clients for obesity, skin nourishment, hair treatment. **(10L)**

**References**

1. Cotton R. Lifestyle and Weight Management Consultant Manual. San Diego, CA; American Council on Exercise. 1996
2. Cox. L. Seaworthy. Women's Sports and Fitness July-August 1995;
3. Howley E. and BD. Franks, Health and Fitness Instructor's Handbook, 2nd ed. Champaign, IL: Human Kinetics, 1992.
4. Institute of Medicine. Assessing Military Readiness in Women: The Relationship Between Body Composition, Nutrition, and Health. Washington, D.C.: National Academy Press, 1998.
5. Kirkenall DT. and WE. Garrett, Jr. The Effects of Aging and Training on Skeletal Muscle. American Journal of Sports Medicine 1998;
6. Koch. F. Strength Training for Sports; Applied FuturisticsSM, 1994. SJ. Montain, WA. Latzka, and MN Sawka. Fluid Replacement Recommendations for Training in Hot Weather. Military Medicine 1999;
7. Shephard. RJ. Aging and Exercise. In: Encyclopedia of Sports Medicine and Science, TD. Fahey (Ed.) Internet Society for Sport Science: 1998.
8. Sudy. M. Personal Trainer Manual: The Resource for Fitness Instructors. Boston: Reebok University Press, 1993.
9. Tufts University Health & Nutrition Letter. Outpacing Middle-Age Spread: Running. 1998.

## HUMAN FACTORS AND ERGONOMICS

**Objectives:**

**L T P C**

**4 0 0 4**

1. Learn to optimize the integration of man and machine so as to improve the work rate and accuracy.
2. Know how to minimize physical and mental strain on the individuals/workers there by improving the efficiency.
3. Learn to enhance performance and productivity
4. Study how to prevent fatigue and injury

### UNIT- I

#### Introduction to Ergonomics

- a) Definition, History and evolution.
- b) Scope of Ergonomics in home and other occupations
- c) Nature of work in household and other occupations
- d) Human Body and Work: Physiology of Neuro-muscular function in relation to occupational ergonomics; Physiological factors in muscle work; Physical work capacity; Energy requirement for muscular work; Energy expenditure for different activities; Endurance and muscular strength. **(12L)**

### UNIT- II

#### Job Analysis

- a) Significance of job analysis for occupational ergonomics, Fundamental elements of job analysis.
- b) Anthropometry in relation to occupational ergonomics
- c) Postures-Definition and Scope **(12L)**

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Semester IV /Ppr.No. 22/ Core -22**

**UNIT- III**

**Application of Ergonomic Principles in:**

- a) Tool Evaluation and Design; Work Station Evaluation and Design; Maintenance of Postures
- b) Identifying types of postures assumed during work, analysis and interpretation

**(12L)**

**UNIT- IV**

**Use of instruments employed in ergonomic research.**

- a) Physiological tools for testing and monitoring -Blood pressure, Heart rate at rest, work and recovery period
- b) Exercise ergometry- Cycle ergometer, treadmill

**(12L)**

**UNIT- V**

**Cardio-Respiratory Fitness**

- a) Anthropometric measurements and Physical Fitness Index
- b) Body composition - Body Fat % , Body Surface Area, Lean Body Mass by Skinfold Method and Somatotyping.
- c) Maximum Aerobic Capacity using modified Harvard test ( Queens college test)
- d) Determination of workload using Heart Rate and Oxygen Consumption- Treadmill, step stool.
  - i. Heart Rate and Oxygen Consumption.
  - ii. Pulse Rate
  - iii. Time and Motion Study.

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Semester IV /Ppr.No. 22/ Core -22**

- iv. Physiological Cost.
- v. Energy Cost.
- vi. Cardiac Cost
- vii. Assessment of Physical Work Capacity ( PWC) (12L)

**References**

1. Ainslie, P.N., Campbell, L.T., Keith Frayn,N. Sandy M. Humphreys, Donald P. M. MacLaren, and Thomas Reilly. Physiological, metabolic, and performance implications of a prolonged hill walk: influence of energy intake. *Journal of Applied Physiology*. Vol. 94 no. 3, 1075-1083. 2003.
2. Astrand P. O. and Rodahl K. *Textbook of Work Physiology*. 3rd edn. p. 281.
3. Barasi, M.E. 2003. *Human Nutrition: A Health Perspective, Second Edition*. Taylor and Francis Group. CRC Press. 1986
4. Binisam. Ergonomic Evaluation of Paddy Harvester and Thresher with Farm Women *International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064 Impact Factor (2012): 8 (3)11*. 2014.
5. Bridger, R.S. *Introduction to Ergonomics*. London: Taylor and Francis. 2003.
6. Chatterjee, S., Chatterjee, P., Mukherjee, P.S. and Bandyopadhyay, A. Validity of Queen's College step test to use with young Indian men. *British Journal of Sports Medicine*, 38. 2004.
7. Corlett,E.N. and Bishop, R.P.A., A technique for Assessing Postural Discomfort, *Ergonomics*, 1976.
8. Dabholkar T A, Priyanka Nakhawa, and Sujata Yardi. Common Musculoskeletal problem experienced by fishing industry workers. *Indian J Occup Environ Med*. 2014 May-Aug; 18(2): 48–51.

**MSU/2017-18/PG colleges/ (M.Sc. Nutrition & Dietetics with Hospitality Management)  
Semester IV /Ppr.No. 22/ Core -22**

9. Das S.K., Mahapatra S. — Determination of physical fitness index (PFI) with modified Harvard Step Test (HST) in young men and women. *Ind J Physiol and Allied Sci.* Vol 47(2): 73-75, 1993.
10. Gallagher, D. and Javed, F. Assessment of human body composition, *Handbook of assessment methods of eating behaviours and weight-related problems.* Second edition, Allison, D.B. and Baskin, M.L. (eds), SAGE Publications Inc. USA. 2009.

**FOOD PROCESSING & PRESERVATION**

**Objectives:**

**L T P C**

**0 0 4 2**

1. To know the causes of food spoilages
2. To know and describe the effects of food preservation methods on the nutritional value and quality of food
3. To identify & select processing equipment and preservation methods appropriate for specific foods
4. To describe the effects of preservation methods on the quality of food.

**Practical**

1. Visit to wheat and rice milling plants.
2. Visit to Aavin and other private milk plants
3. Preparation of jam- Pineapple, Multi fruits, papaya.
4. Preparation of squashes- Mango, Grapes, Pineapple, Lime and Ketchup.
5. Preparation of sauces.
6. Preparation of pickles – Mixed vegetables, Mango, Garlic, Lemon, Chilies, Fish and Mutton.
7. Visiting a Food preservation factory.
8. One week training in a Food preservation unit.

**Reference**

1. Dexrosier, N.W. The Technology of Food Preservation, CBS Publisher and Distributors, New Delhi. 1987.
2. .Lal and Siddappa. Fruit and Vegetable preservation. ICMR. 1986.

**MSU/2017-18/PG colleges/ (M.Sc. Nutrition & Dietetics with Hospitality Management)  
Semester IV /Ppr.No. 23/ Practical -7**

3. Luh and Woodroof, Commercial Vegetable Processing. The AVI Publishing Company, INC, Westport. 1975.
4. Ranganna, S. Handbook of Analysis and quality control for fruit and vegetable processing, 2nd Edn., Tata McGraw-Hill Publisher company Ltd., New Delhi. 1986.
5. Arhold Spicer.. Advances in pre concentration and dehydration of Foods. Applied Science Publishers Pvt.Ltd. 1974
6. Charm, S.E. Fundamentals of Food Engineering. The AVI Publishing Co., Connecticut. 1971.
7. Booth, I. R., Kroll, R. G. The preservation of foods by low pH. In: Mechanisms of Action of Food Preservation Procedures. Gould, G. W., Ed. Elsevier Applied Science, London. p. 119. 1989.
8. Borgstrom, G. Principles of Food Science. Macmillan, London. 1968



**MSU/2017-18/PG colleges/ (M.Sc. Nutrition & Dietetics with Hospitality Management)  
Semester IV /Ppr.No. 24/ Practical -8**

**Internship Training in Hospitals (One Month)**

**L T P C**

**0 0 4 2**

- ★ The Dietetic Internship is to provide a high quality education and a variety of supervised practice experiences to prepare interns to be effective entry-level dietitian nutritionists.
- ★ A summary of the Internship shall be submitted to the department and viva voce shall be conducted for student individually.

**MSU/2017-18/PG colleges/ (M.Sc. Nutrition & Dietetics with Hospitality Management)  
Semester IV /Ppr.No. 24/ Elective -1**

**\*Field work/ \*\*study tour- report**

**L T P C**

**0 0 3+ 3**

\* Students are likely to attend their fieldwork locations and complete assignments as listed on Assignments Due Date according to the schedule directed by the department.

\*\*A study tour is a credit-bearing course in which the majority of the academic work is accomplished through group study and travel outside the campus. A summary of the study tour will be submitted to the department.

**MSU/2017-18/PG colleges/ (M.Sc. Nutrition & Dietetics with Hospitality Management)  
Semester IV /Ppr.No. 25/Project**

**Individual Project & Viva-voce**

**L T P C**

**0 0 7+ 8**

Students are encouraged to work on Individual Project to get acquaintance to real life problem solving and hands -on experience. The outcomes of the projects would be submitted as report and viva voce shall be conducted for student individually.