

CERTIFICATE COURSE IN
NUTRITION & EXERCISE FOR FITNESS

(ADD-ON-COURSE)

OBJECTIVES:-

- i. To introduce a career oriented and skill enhancing course on nutrition for fitness
- ii. To impart knowledge regarding importance of nutrition and exercise for physical, psychological, social and spiritual fitness of an individual.
- iii. To impart and develop intellectual as well as physical skills among the students in the planning and execution of exercise and nutritional principles for fitness management.
- iv. To understand the importance of alternative therapies in the overall fitness of an individual.
- v. To enable the students develop entrepreneurial abilities in the field of fitness.

DURATION : 3 MONTHS

FEE STRUCTURE: RS 6,500/- PER STUDENT

MARKING SCHEME :

- 2 Theory Paper : 100 marks each**
- 1 Practical : 100 Marks**
- Industrial Visit & its report : 30 Marks**
- Project : 50 Marks**
- Viva Voce : 20 Marks**
- TOTAL : 400 MARKS**

ELIGIBILITY : OPEN TO ALL GRADUATES

PAPER-I; EXERCISE & HOLISTIC HEALTH

Objectives:

1. To impart knowledge on changes in the human physiology during exercise.
2. To enable the students understand the role of exercise in fitness.
3. To enable the students understand the benefits of exercise in therapeutic conditions

| S.No. | TOPIC & CONTENT | TOPIC NO. |
|-------|--|--|
| 1. | <u>BODY COMPOSITION</u> -An overview of human body composition -Factors influencing body composition-Age, Sex, etc...with special emphasis on Exercise. -Methods of Assessing body Composition | 1.0 1.1 1.2 |
| 2 | <u>MUSCLE PHYSIOLOGY</u> -Structure, Composition , Types and Functioning of muscles -Types of muscle exercises-endurance, resistance and flexibility and their effect on the composition and strength of muscle -Exercise related Muscle injuries -Adaptation to exercise-causes & concerns -Markers of muscle fitness | 2.0 2.1 2.2 3.0 |
| 3 | <u>CARDIOVASCULAR RESPONSE TO EXERCISE</u> -Physiology of Cardiovascular System-Effect of exercise -Markers of cardiovascular fitness -Effect of Exercise training on Cardiovascular fitness -Role of exercise in the diseases of CV system | 3.1 3.2 4.0 |
| 4 | <u>PULMONARY RESPONSE TO EXERCISE</u> -Physiology of respiration - Effect of Exercise training on pulmonary function - Markers of pulmonary fitness | 4.1 4.2 |

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| 5 | <p><u>EXERCISE & SKELETAL FITNESS</u></p> <p>-Bone Physiology-Structure of bone, Bone formation & remodeling</p> <p>-Types of joints</p> <p>-bone injuries during exercise training</p> <p>-Exercise & bone health</p> | <p>5.0</p> <p>5.1</p> <p>5.2</p> <p>6.0</p> |
| 6 | <p><u>FLUID & ELECTROLYTE BALANCE, ACID BASE BALANCE-EFFECT OF EXERCISE</u></p> | <p>7.0</p> |
| 7 | <p><u>ENDOCRINAL AND NEURONAL FACTORS INFLUENCING EXERCISE PERFORMANCE</u></p> | <p>8.0</p> |
| 8 | <p>HOLISTIC HEALTH</p> <p>-Definition and Meaning</p> <p>-Dimensions of Wellness</p> <ul style="list-style-type: none"> - Physical - Social - Emotional - Spiritual - Environmental - Psychological - Occupational | <p>8.1</p> <p>9.0</p> |
| 9 | <p>SIGNS & BENEFITS OF WELLNESS:</p> <ul style="list-style-type: none"> - Relationship of Health and Disease with Personality - Coronary type personality - Cancer prone personality - Health effects of depression - Suicide – Warning signs / prevention - Behavioral changes and wellness | <p>9.1</p> <p>9.2</p> |
| 10 | <p>STRESS & HEALTH</p> <ul style="list-style-type: none"> - Effects of stress on the body - Signs and Symptoms of Stress - Stress Assessment - Stress Reduction Techniques | <p>10.0</p> |

REFERENCES:

1. **Rhodes,R & Pflouzer, R (2003) Human Physiology, Thomson Brooks & cole, 4th Ed.**
2. **Waugh,A and Grant, A (2006) Anatomy and Physiology in Health and illness, Churchill Livingstone, 10th ed.**
3. **Davier, A, Blakeley, GH and Kidd,C (2001) Human Physiology, Harcourt Pub., 1st ed**
4. **Tortora,GJ and Grabowski, RS (1993) Principles of anatomy and Physiology, Harper Collins College Publishers, 7th ed.**
5. **McArdle, WD., Katch, FI & Katch, VL (1996) Exercise Physiology, 4th ed., Williams & Wilkins, A Waverly Company.**
6. **Powers Sand & Dodd Stephen (1996) ,Total fitness, Published by Allyn & Bacon, University of Florida**
7. **Hoeger, W., Turner Low, W., Hafen Brent (2002), wellness: Guidelines for a healthy life style Wadsworth/Thomas Learning), USA**
8. **Mind , body & Soul, the body shop (1998) bullfinch Press Book, little brown & Co.**
9. **Bhait and Savur, S (1998) Fitness for Life., Jaico Pub. House.**
10. **Hamlyu Encyclopedia of Complimentary Health (1996)**

NUTRITION FOR FITNESS- THEORY

OBJECTIVES:

1. To enable students understand the interaction between exercise and nutrient metabolism.
2. To enlighten students on common nutritional problems experienced by persons following exercise programmes for fitness.
3. To train students in the nutritional management of physically active persons suffering from metabolic diseases.

| S.NO. | UNIT & TOPICS | LECTURES |
|-------|---|------------|
| 1 | ENERGY: | 1.0 |
| | -Release of energy from macronutrients- A review | 1.1 |
| | -Energy metabolism during exercise -Energy requirements for physically active persons | 1.2 |
| 2 | CARBOHYDRATES: | 2.0 |
| | -Effect of exercise on carbohydrate metabolism | 2.1 |
| | -Pre exercise diet & carbohydrate loading | |
| | - Carbohydrate intake during exercise - ingestion, performance and fatigue - Type, Timing and rate of ingestion | 2.2 |
| | -Post exercise carbohydrate intake - Carbohydrate requirements- quality concerns | |
| 3 | PROTEINS: | 3.0 |
| | -Amino acid metabolism during exercise | 3.1 |
| | -Effect of protein on exercise performance | |
| | -Ingestion of protein before & after exercise | |
| | -Protein requirements for persons engaged in exercise programme. | 4.0 |
| 4 | LIPIDS: | 4.0 |
| | -Fat metabolism during exercise with special reference to the type & intensity of exercise | 4.1 |
| | -Nutritional strategies to enhance oxidation of fat during exercise | |
| | -Lipoproteins and exercise-Impact of type & intensity of exercise on serum lipoproteins and CVD risk. | 4.2 |
| | | 5.0 |
| 5 | Effect of exercise on fluid and electrolyte balance | 5.1 |
| | - Fluid imbalances-dehydration & over hydration | |
| 6 | -Importance of sports drinks | 6.0 |
| | MICRONUTRIENTS & EXERCISE | |

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| | B) Vitamins & Exercise | |
| | - Effect of exercise on fat soluble and water soluble vitamins in the body | 6.1 |
| | - Functions with special reference to the antioxidant function and sources | 6.2 |
| | - Vitamin requirements for persons engaged in exercise programme | 6.3 |
| | C) Minerals & Exercise | |
| | - Influence of exercise on selected minerals in the body-Calcium, Iron and Zinc | |
| | - Functions with special reference to the antioxidant function and sources | 6.4 |
| | - Mineral requirements for persons engaged in exercise programme | 7.0 |
| 7 | ERGOGENIC AIDS: Nutritional and Non Nutritional Ergogenic aids. | 8.0 |
| 8 | Nutritional problems in physically active persons | |
| | - Mineral Malnutrition – Athletic Triad | |
| | - Vitamin Malnutrition | 8.1 |
| | - Eating Disorders – Weight concerns | 9.0 |
| 9 | Nutrition for weight management | 10.0 |
| 10 | Nutritional Counseling | |

REFERENCES:

1. Ira Wolinsky (1998) “ Nutrition in Exercise & Sport”, 3rd ed.
2. Fred and Brouns (2002) “ Essentials of sports Nutrition”, 2nd ed., John Wiley & Sons pub.
3. W.D. Mc Ardle & Katch (2005) “ Sports & Exercise Nutrition”, 4th ed.,Williams & Wilkins, A Waverly Company
4. Williams C & Delvin JT (1992) Foods, Nutrition & Sports Performance”, 1st ed., E&FN Sons’Pub.
5. Burke L & Deakin V (2006) Clinical Sports Nutrition”, 3rd ed., Tata McGraw Hill Pub.,
6. Summerfield LM (2001) “ Nutrition, Exercise and Behaviour

ASSESSMENT OF FITNESS – PRACTICAL

Objectives:

1. To enable students understand the methods of assessing the physiological, nutritional and Psychological fitness.
2. To train the students in planning exercise and counseling strategies for special conditions- weight management, diabetes, CVD etc.

| S.No. | Topic | No. of Sessions |
|-------|--|-----------------|
| 1. | Assessment of Cardio respiratory fitness Cardio respiratory Exercises (Vo2 Max etc...) | 1 |
| 2 | Assessment of Muscular fitness Muscle Strength, Endurance & Flexibility Exercises (Bench Jumps, Push ups, Sit & Reach Test etc...) | 1 |
| 3 | Assessment of skeletal fitness-BMD | 1 |
| 4 | Suitable Exercise programme for special conditions -Weight Reduction & Weight Management | 1 |
| 5 | Prevention & Management of Exercise injuries | 1 |
| 6 | Assessment of Psychological Fitness | 1 |
| 7 | Assessment of Nutritional fitness - Assessment of nutrient intake -Recall, Food record & Food Frequency Questionnaire methods | 1 |
| 8 | Planning & Preparation of Low calorie recipes – high fibre & low fat recipes | 1 |
| 9 | Planning & Preparation of Micronutrient Modified recipes – Iron & Calcium rich recipes, Antioxidant rich recipes, Low sodium recipes etc.... | 1 |
| 10 | Planning & Preparation of Sports drinks. | 1 |
| 11 | Planning and cooking of reducing diets - for children, Adolescents and Adults (Males & Females) | 1 |
| 12 | Planning & Preparation of Diets for Increasing body weight | 1 |

REFERENCES:

1. McArdle, WD., Katch, FI & Katch, VL (1996) Exercise Physiology, 4th ed., Williams & Wilkins, A Waverly Company
2. Gopaldas,T., Seshadri,S.(1987). Nutrition monitoring & Assessment, Delhi, Oxford University Press
3. Jelliffe,D (1966), The assessment of Nutritional status of the community, WHO (Geneva)
4. Janda, L.H. (1997). Psychological testing: theory and application, Boston, Allyn & Bacon

Visits

Central Labour institute
Gymnasiums (K-11, Rebock etc)
Dietetic departments of hosapitals/institutes

Project

Literature survey/Market survey