Singapore Sports Council
Fitness Instructor Course

Course Title: Fitness Instructor Course (FIC)
Course Duration: 49 hours
Course Tutor/s: SSC approved lecturers
Date: Correct as of 2009 January

Course Objectives

Upon completion of this course, students will be able to:

1. Understand the benefits of a physically active lifestyle.
2. Understand in greater detail the relevance of selected aspects of Human Anatomy and Physiology.
3. Be better prepared to do basic and essential physical fitness assessment.
4. Plan and implement fitness and conditioning programmes for *general* population.
5. Explain the role of the essential nutrients.
6. Role of motivation in exercise adoption and adherence
7. Explain the benefits of physical activities and be able to demonstrate safe and effective exercises.

Course Text

Health Fitness Instructor's Handbook. Fifth Edition. Howley, Edward T & Franks, B. Don (2007) Human Kinetics

---

Course Assessment

THEORY

Duration of Exam – 2.5 hours

SECTION 1 – Multiple Choice and True/False Questions
No. of questions – 80 questions
No. of marks – 80 marks

SECTION 2 – Labeling of Muscular and Skeleton System
No. of marks – 20 marks

SECTION 3 – Fill in the Blanks, Short Question Answers and Calculations
No. of marks – 50 marks

Total of 150 marks. 105 marks to pass (70%)

PRACTICAL

The 4 stations for assessments are:

1. Stack Weights
2. Free Weights
3. Flexibility
4. Body Composition

Each station is based on 100 marks.

Total of 400 marks. 280 marks to pass (70%)
Note: Minimum for each station is 50 marks.

Course Outline

		Hours	Chapter
1	Introduction & Importance of Physical Activity and Health	2 hrs	1
2	Anatomy & Kinesiology (Theory & Lab)	4 hrs	27
3	Exercise Physiology	6 hrs	28
4	Weight Training Exercises & Programming (Theory & Practical)	6 hrs	12 & 27
5	Body Composition (Theory & Practical)	6 hrs	6
6	Exercise and Weight Management	2 hrs	11
7	Fitness Evaluation & Exercise Prescription for Cardiorespiratory Fitness	6 hrs	3,4,5 &10
8	Flexibility (Theory & Practical)	4 hrs	9 & 13
9	Basic Nutrition	2 hrs	7
10	Exercise Safety & First Aid	5 hrs	25
11	Basic Behavioral Psychology	2 hrs	22
12	Course & Examination Review	4 hrs	All
	Total number of hours:	49 hrs	
	Attachment:	24 hrs	

Learning Objectives	Hours	Chapter
1. PHYSICAL ACTIVITY & HEALTH Participants should be able to: 1.1 Explain the interaction of physical activity, fitness and health. (Page 4-8) 1.2 Show how physical activity prevents premature health problems. (Page 8-10) 1.3 Realize the implications for the health professional. (Page 10-13)	2	1

2. ANATOMY & KINESIOLOGY This should be a laboratory-based topic. Participants should be able to: 2.1 Name the major muscles and bones 420 & 428 2.2 Explain the difference between tendon and ligament; how muscles are attached by tendons to bones and how tendons pull on bones to cause movement around the joint; how ligaments give stability to a joint. Use models and charts. 2.3 Explain the Structure and function of a synovial joint. (419-421); Use specific joint movement terminology (421-427) 2.4 Explain concentric, eccentric and isometric muscle contraction (Page 428-431) 2.5 Explain the mechanics of balance and torque and how they apply to safe and effective movements during exercise (Page 438-442)	4	27
3. EXERCISE PHYSIOLOGY Participants should be familiar with: Muscle structure and muscle contraction (sliding filament theory/cross-bridge cycle); Strength and mass adaptations in muscles – hypertrophy and neuromuscular adaptations. (Page 447-449) The need for ATP and where it is used in the cross-bridge cycle. The different sources of energy for making ATP – phosphocreatine, glycogen, fat. (Page 446-447) The three main muscle fibre types and performance and adaptations with training (Page 450-451) Metabolic, Cardiovascular and Respiratory Responses to Exercise: Measuring oxygen uptake. (Pages 451 – 452); Fuel Utilization during Exercise. (Pages 452 – 453); Effect of Diet and Training on Fuel Utilization. (Page 453); Transition from Rest to Steady-State Work. (Page 454 – 455); Graded Exercise Test. (Page 455 – 461); Effects of Training and Detraining on Physiological Responses. (Page 461 – 463); The importance of the aerobic energy system and oxygen consumption as a measure of health and fitness. (Page 62) The avenues of heat loss in the exercising body through Conduction, Convection, Radiation and Evaporation and the adaptations with training (Page 466-467)	6	28 & 5

4. WEIGHT TRAINING EXERCISES & PROGRAMMING (Theory & Practical) Participants should be able to explain and use: 4.1 Various types and modes of strength training; the principles of strength training; strength training guidelines; resistance training systems (Page 189-209) 4.2 Identify and demonstrate safe and effective exercises designed to enhance the muscular fitness of specific muscle groups. (Page 214-223). 4.3 Understand the tips for exercising muscle groups and common exercise mistakes (Page 431- 434) 4.4 Using stack weights and free weights (Practical)	6	12 & 27
5. BODY COMPOSITION (Theory & Practical) Participants should be familiar with: 5.1 Body composition as a component of fitness; health and body composition (Page 90-91) 5.2 Demonstrate the use of BIA instruments and skinfold calipers to estimate body composition using the guidelines for reasonable accuracy. Page 93-99) 5.3 Calculating and interpreting BMI; target body weight and fat percentage. (Page 97-100)	6	6
6 .EXERCISE & WEIGHT MANAGEMENT Participants should be able to explain: 6.1 Factors that contribute to obesity and prevalence of overweight and obesity in Singapore. (Page 178-180; *but use Singapore statistics)* 6.2 Strategies for maintaining a healthy weight. (Page 180-185) 6.3 Gimmicks and Gadgets for Weight Loss (Page 185)	2	11
7. FITNESS EVALUATION & EXERCISE PRESCRIPTION FOR CARDIORESPIRATORY FITNESS Participants should be familiar with:	6	3, 4, 5, 10

7.1 The Health Status Questionnaire and the PAR-Q (Page 21-27) 7.2 Risk factor assessment & criteria for decision on physical activity. (Page 28-33) 7.3 Measuring energy expenditure. The expression of oxygen consumption in: $L.min^{-1}$, $ml.kg^{-1}.min^{-1}$, & METS (Page 42-45) 7.4 Energy Requirements of Walking, Running, Cycle ergometry, stepping, and Exercising to Music. (Page 45-59) 7.5 Benefits of exercise (Page 154-155); Recommendations, guidelines & prescription for CRF programmes (Page 156 – 167): Programme selection (Page 168-170); Environmental concerns (Page 170-171).		
8. FLEXIBILITY (Theory & Practical) Participants should understand: 8.1 The role of proprioceptors in flexibility training (muscle spindle and golgi tendon organ) *(Notes will be given by lecturer)* 8.2 When to use static passive, static active, PNF and dynamic stretching. *(Notes will be given by lecturer)* 8.3 Flexibility and factors affecting range of motion (ROM) (Page 134-137) 8.4 The anatomy of the Spine; Spinal movements; Low back pain; Core stability (Page 226–233) 8.5 Safe and effective exercises for the abdominals and low back. (Page 232 -250) and other joints. (Practical)	4	9 & 13
9. BASIC NUTRITION Participants should be able to explain: 9.1 The role of the six classes of nutrients and the recommended intake of carbohydrates, fats and proteins for the general population Page 104-110) 9.2 Assessing Dietary Intake & Recommendations for Dietary Intake (Page 110-113) 9.3 Optimal: Diet, exercise and blood lipid profile (Page113-115) 9.4 Nutrition for physically active individuals- hydration, protein	2	7

intake, ergogenic aids, carbohydrate intake during exercise. (Page 115-117; 383-385)		
10. EXERCISE SAFETY & FIRST AID Participants should understand: 10.1 Methods of Preventing injuries – controlling injury risks, factors contributing to injury, reducing injury risk (Page 376-378) 10.2 Injury treatment – with PRICE; soft tissue injuries, fractures, wounds, skin irritations. (Page 378-382) 10.3 Common orthopedic problems: Inflammatory reactions; Shin Splints, stress fractures (Page 388–392) 10.4 Heat related problems. (Page 383-385)	5	25
11. BASIC BEHAVIORAL PSYCHOLOGY Participants should understand: 11.1 How to influence people to exercise. (Page 332-334) 11.2 Marketing and motivational strategies. (Page 334-335) 11.3 How to change participants' behaviour. (Page 336-340) 11.4 Health & fitness counseling. (Page 340-341)	2	22