Scheme of work

For each VTCT (ITEC) qualification, the lecturer/centre must complete a scheme of work for each unit indicating how the Lecturer is planning to cover the unit content throughout the course. Set out the planned sessions in terms of learning outcomes to be achieved. These should match those stated within the VTCT (ITEC) unit specification. Include all units of each course offered. Hours should meet the minimum guided learning hours listed within the unit specification.

Unit title: iUSP143 - Principles of exercise, fitness and health

Total contact tuition hours proposed: 28

Lecturer(s) responsible:

Learning objectives	Lecture content	Suggested resources	Approx. hours
Introductory session	• College rules and regulations • College mission statement • VTCT (ITEC) rules and regulations • Health & safety • Timetable • Dates – holidays etc. • Syllabus • Recommended books	• Lecture • Q&A • Using all the documents listed to ensure the students understand the college expectations and their commitment to the course	
1. Understand the effects of exercise on body systems			
Describe cardiovascular and respiratory adaptations to endurance/aerobic training	• The consequences of endurance/aerobic training on the cardiovascular and respiratory systems	• Whiteboard • Lecture • Q&A • Handout • Homework • Test	4
Identify the short and long term effects of exercise on blood pressure	• Factors which produce, maintain and affect blood pressure • Causes and effects of hypotension and hypertension • Way in which blood pressure is measured • Valsalva effect		

Describe the 'blood pooling' effect following exercise	• Consequences of blood pooling in the veins • How to ensure adequate circulation reaches skeletal muscles, heart and brain		
Describe the effects of exercise on bones and joints including the significance of weight bearing exercise	• Considerations during childhood/adolescence - Growing pains - Development of peak bone mineral density - Common overtraining/overuse injuries • Mineral salts • Collagen fibres • Bone density • Mechanical stresses from exercise • Ageing process • Hormones • Body weight • Calcium • Vitamin D		
Describe delayed onset of muscle soreness (DOMS)	• 24-48 hours after exercise • Microscopic tears in connective tissue • Action • Treatment		
Identify exercises or techniques likely to cause delayed onset of muscle soreness	• Eccentric muscular effort • Ongoing research to determine exact cause		
Describe the short and long term effects of different types of exercise on muscles	• Positive/beneficial effects • Negative/detrimental effects		
Describe different exercises that can improve posture	• Exercises with equipment • Floor based exercises • Functional movement exercises (e.g. balance, stability and flexibility) • Water based exercises		

2. Understand the components of fitness			
Define the components of health related fitness	• Strength • Aerobic endurance • Muscular endurance • Flexibility • Body composition • Principles of training to include: - Specificity - Progressive overload - Reversibility - Adaptability - Individuality - Recovery	• Whiteboard • Lecture • Q&A • Handout • Homework • Test	4
Define the components of skill related fitness	• Agility • Balance • Co-ordination • Power • Reaction time • Speed		
Identify the factors that affect health and skill related fitness	• Gender • Ageing • Smoking • Diet • Alcohol • Pregnancy • Health • Level of fitness		

3. Understand how to apply the principles and variables of fitness to an exercise programme			
Describe the physiological implications of: • Specificity • Progressive overload • Reversibility • Adaptability • Individuality • Recovery time	• Specificity • Progressive overload • Reversibility • Adaptability • Individuality • Recovery time	• Whiteboard • Lecture • Q&A • Handout • Homework • Test	4

Explain the principles of FITT (frequency, intensity, time and type)	• Frequency of exercise undertaken • Intensity of exercise undertaken • Duration of exercise undertaken • Type of exercise undertaken		
Explain the principles of a progressive training programme in developing components of fitness	• Developing a fitness plan • Monitoring the exercise programme • Adapting the fitness plan		
Explain how to recognise when and how to regress a training programme	• How to set, review and revise short, medium and long-term SMART goals		
Explain the principles of adaptation, modification and progression for each component of FITT (frequency, intensity, time and type)	• Frequency – times per week • Intensity – low to moderate to high • Time – from 15 to 60 minutes • Type – exercise/activity		
Describe the effect of speed on posture, alignment and intensity	• How your posture can positively or negatively impact on your speed during exercise • How posture will reduce or increase your injury potential • How alignment can positively or negatively impact on your speed during exercise • How alignment will reduce or increase your injury potential • How intensity can positively or negatively impact on your speed during exercise • How intensity will reduce or increase your injury potential		
Describe the effect of levers, gravity and resistance on exercise	• The components of levers: rigid bar, fulcrum (F), effort (E) and weight (W) • First order of lever (EFW) • Second order of lever (FWE) • Third order of lever (FEW) • The effect of lever on exercise • The effect of gravity on exercise • The centre and line of gravity • Anti-gravity muscles • The effect of resistance on exercise		
Describe the differences between programming exercise for physical fitness and for health benefits	• Differences in exercise programming for: - Physical fitness - Health benefits		

4. Understand the exercise contra-indications and key safety guidelines for special populations			
Describe the exercise contra-indications and key safety guidelines for working with older people (50 plus)	• For people over the age of 50, a medical check-up should be sought before starting an exercise programme • Contra-indications • Any recent injuries including fractures, strains, sprains, ruptures or tears • Heart conditions or any history of heart disease • High blood pressure unless medical permission has been granted • Any acute fevers including influenza, glandular fever, common cold, etc. • Any inflammatory joint conditions including arthritis, rheumatoid arthritis, osteoarthritis • Any neurological disorders including strokes, multiple sclerosis unless medically supervised • Any undiagnosed illness • Any musculoskeletal problems including joint or back pain • Any pain and soreness in muscles caused by trauma or injury • After a heavy meal or under the influence of alcohol • If over-tired or exhausted • If under the influence of pain-killing drugs • If there has been any past difficulty with exercise • Obese people • Diabetics unless medical permission is sought • Safety guidelines for working with older people to include: • Ensure pre-exercise screening questionnaire (PARQ) has been completed and signed • Increasing warm up time ensuring gradual increase in pulse rate (at least 15 minutes) • Increasing cool down period • Reduction in intensity of exercise • Ensuring correct technique is used • Allowing more time during transitions e.g. floor to standing • Simplifying exercises • Using exercises light resistance and progress slowly • Avoid extreme spinal flexion	• Whiteboard • Lecture • Q&A • Handout • Homework • Test	4
Describe the exercise contra-indications and key safety guidelines for working with antenatal and postnatal clients	• Contra-indications for antenatal and postnatal clients - Hypertension or hypotension - Circulatory disorders - Heart conditions - Infections - Inflammatory joints conditions - Neurological disorders - Undiagnosed illness - If under the influence of pain killing drugs		

	- Thrombosis - Embolism - Haemorrhage - Cancer - Acute fever - Recent injury - Musculoskeletal disorders • Referral to a health professional if the client is experiencing any of the following symptoms post birth: - Stress incontinence or pelvic floor muscle weakness - 'Dragging' pain or a feeling of heaviness in the lower abdominal or pelvic floor area - Groin, low back pain or difficulty walking - Abdominal muscle weakness, excessive abdominal doming, abdominal muscle separation or softness/sinking at the umbilical mid-line, umbilical hernia • Safety guidelines for working with antenatal and postnatal clients - Exercising in the supine position after 16 weeks of pregnancy - Exercising prone - Prolonged, motionless standing - Heavy, uncontrolled, isometric or prolonged resistance work above the head - Leg adduction and abduction against a resistance - Isometric exercises - Loaded forward flexion - Rapid changes of direction or position - Uncontrolled twisting - Exercise with a risk of falling or abdominal trauma - Excessive and uncontrolled de-stabilisation techniques - No excessive abdominal exercises for at least 12 months post birth - Referral to a health professional if the client experiences pain • Immediately stop exercising if the client experiences: - Dizziness, faintness or nausea - Bleeding or leakage of amniotic fluid - Abdominal or contraction type pain - Unexplained pain in the back, pelvis, groin, buttocks or legs - Excessive shortness of breath, chest pain or palpitations - Hormonal and postural changes - High intensity or impact exercises		
Describe the exercise contra-indications and key safety guidelines for working with young people (14-16)	• Contra-indications for young people (14-16) - Hypertension or hypotension - Circulatory disorders - Heart conditions - Infections - Inflammatory joint conditions		

	- Neurological disorders - Undiagnosed illness - If under the influence of pain killing drugs - Thrombosis - Embolism - Haemorrhage - Cancer - Acute fever - Recent injury - Musculoskeletal disorders • Safety guidelines for working with young people (14-16) - No excessive weight lifting - Care must be taken not to cause overuse injuries		
Describe the key safety considerations for working with disabled people	• Safety guidelines for working with disabled people - Completing pre-exercise screening questionnaire (PARQ-R) - Seeking medical approval - Completing an informed consent form - Additional helpers - Additional support - Additional safety precautions - IFI (Inclusive Fitness Initiative) - Duty of care and liability		

5. Understand how to safely monitor exercise intensity			
Describe the benefits and limitations of different methods of monitoring exercise intensity including: • The talk test • Rate of perceived exertion (RPE) • Heart rate monitoring and the use of different heart rate zones	• To include the benefits and limitations of: - Percentage of maximal heart rate (MHR) - Percentage of heart rate reserve (Karvonen formula) - Rate of perceived exertion (RPE) – Talk test method, intensity measured by MET's - Heart rate monitor	• Whiteboard • Lecture • Q&A • Handout • Homework • Test	4

6. Understand the health benefits of physical activity			
Describe the health benefits of physical activity	• Physical benefits, for example: - Reduced blood pressure - Improved body composition - Improved posture - Reduced risk of certain diseases including CHD, some cancers, type 2 diabetes, hypertension, obesity, osteoporosis • Psychological benefits, for example: - Reduced risk of stress, depression and anxiety	• Whiteboard • Lecture • Q&A • Handout • Homework • Test	4
Describe the effect of physical activity on the causes of certain diseases including: • Coronary heart disease • Some cancers • Type 2 diabetes • Hypertension • Obesity • Osteoporosis	• Increased heart rate • Blood pressure • Oxygen intake • Build-up of carbon dioxide in the blood stream • High blood cholesterol levels • Stroke volume • Respiratory rate • Reduced risk of heart disease • Cardiac output • Body fat/overweight • Bone disorders and diseases		

7. Understand the importance of healthy eating			
Describe the national food model/guide	• Nutrient recommendations • Guidance for food choice	• Whiteboard • Lecture • Q&A • Handout • Homework • Test	4
Describe key healthy eating advice that underpins a healthy diet	• The food pyramid calorie intake • Food varieties • Portion size • Fruit and vegetable intake • Water intake • Limiting salt, sugar and refined-grained products		
Explain the importance of adequate hydration	• The function of water to include: - Hydration - Forms 95% of plasma - Bathes the tissues • The effects of dehydration on the body to include: - Thirst - Headaches - Toxicity and the strain placed on other organs e.g. skin and liver		

Explain professional role boundaries in relation to offering nutritional advice	• When a client should be recommended to visit their GP • When a client should be referred to a Registered Dietician and the correct procedures • When you should refer a client to an Accredited Sports Dietician and the correct procedures • Advise only on basic healthy eating		
Explain the dietary role of the key nutrients	• The food pyramid • The role of carbohydrates, fats and proteins as fuels for aerobic and anaerobic exercise		
Identify the common dietary sources of the key nutrients	• Carbohydrates • Fats • Proteins • Fibre • Vitamins • Minerals		
Describe the energy balance equation	• Definition of a calorie • Definition of a kilojoule • Energy balance equations – calories consumed versus calorie expenditure • UK dietary reference values (DRV) • Recommended daily allowance (RDA) • Recommended daily intake (RDI) • Glycaemic index • Current national guidelines • The benefits of sports drinks and energy bars for a person exercising to include: - Isotonic drinks - Hypotonic drinks - Hypertonic drinks - Energy bars		
Explain the health risks of poor nutrition	• Malnutrition • Anorexia nervosa • Anorexia bulimia • Obesity		

Document History

Version	Issue Date	Changes	Role
v1	26/09/2019	First published	Qualifications Administrator