SCHEME OF WORK APPLICATION FORM

For each ITEC qualification, the lecturer/centre must complete a Scheme of Work indicating how the lecturer is planning to cover the ITEC syllabus throughout the course.

Set out the planned sessions in terms of *Learning Outcomes* to be achieved. These should match those stated within the ITEC syllabus for each unit. Include all units of each course offered. Hours should meet the minimum guided learning hours listed within the syllabus.

Qualification Title: Anatomy & Physiology **Lecturer(s) responsible:**

Total contact tuition hours proposed: 100

Learning Objective	Lecture Content	Suggested Resources	No. hours
Introductory session	College rules and regulations College mission statement ITEC rules and regulations Health & Safety Timetable Dates – holidays etc. Syllabus Recommended books Uniform	Lecture Q&A Using all the documents listed to ensure the students understand the college expectations and their commitment to the course	
Skeletal System			
Understand and explain the functions of the skeletal system Understand and explain the structure of bone tissues Understand and explain the types of bone Understand and explain the position of the bones of the skeleton	• Support framework • Provides attachments for muscles • Forms joints to provide movement • Forms erythrocytes in the bone marrow • Stores calcium • Protection • Compact • Cancellous • Long • Short • Flat • Irregular • Sesamoid ♦ Give examples of where in the body they would be found ♦ **Cranium** • Parietal • Frontal • Ethmoid • Sphenoid • Occipital • Temporal ♦ **Facial** • Nasal • Zygomatic • Maxilla • Lacrimal • Turbinator • Palatine • Mandible • Vomer • Hyoid ♦ **Vertebrae** • Cervical • Thoracic • Lumbar • Sacrum • Coccyx ♦ **Shoulder Girdle** • Scapula • Clavicle • Thoracic Cage: Ribs, Thoracic vertebrae ♦ **Pelvic Girdle** • Innominate bones: Ischium, Ilium • Pubis	OHP/Whiteboard Lecture Q&A Handouts: 1. Blank picture of spine 2. Blank picture of skeleton Homework Tests	8

	♦ **Upper Limb** • Humerus • Ulna • Radius • Carpals: Scaphoid, Lunate, Triquetral, Pisiform, Trapezium, Trapezoid, Capitate, Hamate • Metacarpals • Phalanges ♦ **Lower Limb** • Femur • Tibia • Fibula • Patella • Tarsals: Talus, Calcaneus, Navicular, Cuneiforms (Medial, Intermediate, Lateral), Cuboid • Metatarsals • Phalanges		
Understand and explain different types of joints	• Fixed • Slightly moveable • Freely moveable • Ball and socket • Hinge • Pivot • Gliding • Saddle		
Understand, recognise and give possible causes of postural deformities	• Kyphosis • Lordosis • Scoliosis		
Understand, explain and recognise the symptoms, causes and effects of diseases and disorders of the skeletal system	• Arthritis: Osteo and Rheumatoid • Gout • Osteoporosis • Stress		
Muscular System			
Understand and explain the structure and function of the different types of muscle with examples	• Voluntary • Involuntary • Cardiac	OHP/Whiteboard Lecture Q&A Handouts: Blank picture of muscles of the – leg, arms, back, abdomen, face Homework Tests	16
Understand and explain the structure and function of the various attachments of muscles	• Ligament • Tendon • Fascia		
Understand and explain the terms in relation to the muscular system	• Origin • Insertion • Action • Tone • Tension • Fatigue • Flexion • Extension • Abduction • Adduction • Rotation • Supination • Pronation • Dorsiflexion • Plantarflexion • Eversion • Inversion • Circumduction		
Understand and explain muscular contraction	• How a muscle works • How it provides movement • How a muscle knows when to contract • The source of energy to create a contraction • Different stages of contraction, i.e. tone and relaxation • Over contraction, i.e. causes of muscle tension and muscle fatigue		

Understand and explain the formation of lactic acid Understand and explain the position (with the aid of diagrams) and action of the following muscles	• Cause and effect ♦ **Trunk/torso** • Trapezius • Sternocleido mastoid • Erector Spinae • Splenius Capitis • Latissimus Dorsi • Serratus Anterior • Gluteus Maximus • Gluteus Medius • Gluteus Minimus • Psoas • Pectoralis Major and Minor • Rectus Abdominus • Internal Oblique • External Oblique • Transversalis Abdominus • Rhomboid Major and Minor • Infraspinatis • Supraspinatis • Teres Major • Teres Minor • Iliacus • Subscapularis • Quadratus abdominus ♦ **Arm** • Deltoid • Biceps • Triceps • Brachialis • Coraco Brachialis • Brachioradialis • Pronator Teres • Supinator Radii Brevis • Flexor Carpi Radialis • Extensor Carpi Radialis • Extensor Carpi Ulnaris • Flexor Carpi Ulnaris • Flexor Carpi Digitorum • Extensor Carpi Digitorum • Muscles of Thenar Eminence • Muscles of Hypothenar Eminence ♦ **Leg/Thigh** • Quadriceps: Rectus Femoris, Vastus Lateralis, Vastus Medialis, Vastus Intermedius • Hamstrings: Biceps Femoris, Semimembranosus, Semitendinosus • Adductor Longus • Adductor Magnus • Adductor Brevis • Gracilis • Sartorius • Piriformis • Gluteus Maximus • Gluteus Medius • Gluteus Minimus ♦ **Lower Leg** • Gastrocnemius • Tibialis Anterior • Peroneus Longus • Flexor Digitorum Longus • Extensor Digitorum Longus • Soleus • Extensor Hallucis Longus ♦ **Face, neck and scalp** • Orbicularis Oculi • Orbicularis Oris • Masseter • Buccinator • Levator Anguli Oris		

	• Levator Labii Superioris • Depressor Anguli Oris • Depressor Labii Inferioris • Depressor Labii Oris • Mentalis • Zygomaticus • Temporalis • Nasalis • Procerus • Corrugator • Frontalis • Occipitalis • Pterygoids • Triangularis • Trapezius • Platysma		
Understand and explain the cause and effect of the following muscular conditions	• Fibrositis • Cramp • Muscle Fatigue • Atony • Atrophy • Myositis • Rupture • Spasm • Spasticity • Sprain • Strain • Stress		
The Skin			
Understand and explain (with the aid of a diagram) the position and function of the following parts of the skin	♦ **Epidermis** • Stratum Corneum • Stratum Lucidum • Stratum Granulosum • Stratum Spinosum/Malphigian Layer • Stratum Germinativum/Basal Layer • Melanocytes ♦ **Dermis** • Blood supply • Lymphatic supply • Hair follicle • Hair • Sebaceous gland • Sweat glands: eccrine and apocrine • Sensory nerve endings • Dermal Papilla • Collagen • Elastin • Histeocytes • Mast Cells • Fibroblasts • Arrector pili muscle ♦ Subcutaneous layer	OHP/Whiteboard Lecture Q&A Handouts: 1. Cross section of the skin 2. Various pictures of skin diseases and disorders Homework Tests	16
Understand and explain the functions of the skin	• Secretion • Heat Regulation • Absorption • Protection • Elimination • Sensation • Vitamin D formation (7-dehydro-cholesterol) • Keratinisation • Melanin formation		
Understand, explain and recognise skin types	• White • Black • Asian type skin • Mixed • Dry • Oily • Mature • Young • Dehydrated • Sensitive • Combination		
Understand and explain skin diseases and disorders and when they are contraindicated to treatment	♦ Recognition points ♦ Whether congenital, bacterial, viral, fungal or an infestation and whether the condition is contraindicated ♦ **Congenital** • Eczema • Psoriasis • Dermatitis ♦ **Bacterial** • Acne Vulgaris • Impetigo • Acne Rosacea • Folliculitis • Boils		

Understand the different skin cancers and their causes	♦ **Viral** • Warts • Verrucas • Herpes simplex • Herpes zoster ♦ **Fungal** • Tinea corporis • Tinea Pedis ♦ **Pigmentation disorders** • Vitiligo • Albinism • Chloasma • Ephelides • Lentigo • Moles • Naevae • Port wine stain ♦ **General disorders** • Broken capillaries • UV damage • Urticaria • Allergic reaction • Comedones • Milia • Basal Cell Carcinoma • Squamous Cell Carcinoma • Malignant Melanoma		
The Cell			
Understand and explain (with the aid of a diagram) the structures of the cell and their function Understand and explain the process of Mitosis Understand and explain the term Histology Understand and explain the structure and function of the main types of tissue in the body with examples Understand and explain how substances enter and leave the cell	• Cell membrane • Nuclear membrane • Nucleus • Nucleolus • Cytoplasm • Centrosome • Golgi apparatus • Mitochondria • Lysosome • Endoplasmic Reticulum • Ribosome • Centrosome • Centromere • Vacuoles • Centrioles • Chromatids • Prophase • Metaphase • Anaphase • Telophase • Define Histology ♦ Epithelial tissue • Simple: • Squamous • Cuboidal • Ciliated • Columnar • Compound: • Transitional • Stratified ♦ Nervous tissue ♦ Muscular tissue • Striated • Non-striated • Cardiac ♦ Connective tissue • Areolar • Adipose • White fibrous • Yellow elastic • Bone • Blood • Lymph ♦ Cartilage • Yellow Elastic Cartilage • White Fibro Cartilage • Hyaline Cartilage ♦ Membranes • Serous • Mucus • Synovial • Diffusion • Osmosis • Dissolution • Active transport • Filtration	OHP/Whiteboard Lecture Q&A Handouts: 1. Blank picture of the cell and it's structures 2. Different tissues Homework Tests	10

Circulatory System			
Understand and explain the structure and function of blood and its components Understand and explain the position of the main arteries and veins of the body	• Erythrocytes • Leucocytes • Thrombocytes • Plasma and plasma proteins • Platelets ♦ Describe the vessels in which it is carried • Arteries • Arterioles • Veins • Venules • Capillaries ♦ **Main arteries of the head and neck** • Innominate • Common Carotid • Internal Carotid • External Carotid • Facial• Occipital • Superficial Temporal ♦ **Main veins of the head and neck** • Posterior External Jugular • Occipital • Superficial Temporal • Maxillary • Anterior Facial • Common Facial • Internal Jugular • External Jugular ♦ **Main arteries of the body** • Descending Aorta • Left Common Carotid • Left Subclavian • Right Common Carotid • Right Subclavian • Pulmonary • Right Hepatic • Splenic • Right Renal • Superior Mesenteric • Right Iliac • Inferior Mesenteric • Left Iliac • Vertebral • Axillary • Brachial • Right Ulnar • Left Ulnar • Right Radial • Left Radial • Right Deep Palmar Arch • Left Deep Palmar Arch • Right Superficial Palmar Arch • Left Superficial Palmar Arch • External Iliac • Left Femoral • Right Femoral • Left Popliteal • Right Popliteal • Left Anterior Tibial • Right Anterior Tibial • Plantar Arch ♦ **Main veins of the body** • Inferior Vena Cava • 4 Pulmonary • Right Hepatic • Splenic • Right Renal • Right Iliac • Left Iliac • Right Axillary • Left Axillary • Right Brachial • Left Brachial • Right Basilic • Left Basilic • Right Cephalic • Left Cephalic • Right Subclavian • Long Saphenous • Left Short Saphenous • Right Short Saphenous • Dorsal Venous Arch • Left Femoral • Right Femoral • Left Popliteal • Right Popliteal • Right Posterior Tibial	OHP/Whiteboard Lecture Q&A Handouts: 1. Blank diagram of the arteries of the body 2. Blank diagram of the veins of the body 3. Blank diagram of the heart and pulmonary circulation Homework Tests: 1. Draw and label the arteries of the body 2. Draw and label the veins of the body 3. Draw and label a diagram of the heart and pulmonary circulation 4. Functions of blood and their components 5. Test on the circulatory system	12

	• Left Posterior Tibial • Right Anterior Tibial • Left Anterior Tibial		
Understand and explain the structure and function of the various parts of the heart and of the vessels entering and leaving the heart	• Superior Vena Cava • Aortic Arch • Inferior Vena Cava • Aorta • Right Atrium • Right Ventricle • Left Atrium • Left Ventricle • Septum • Pulmonary Valve • Pulmonary Artery • Pulmonary Veins • Mitral (bicuspid) Valve • Tricuspid Valve • Endocardium • Myocardium • Pericardium		
Understand and explain the pulmonary circulation	• Way in which the blood circulates from the heart to the lungs and back to the heart • Vessels in which the blood is carried • Whether the blood is oxygenated or deoxygenated • Process of gaseous exchange		
Understand and explain the systemic circulation	• Describe the structure and function of the systemic circulation • Describe the Coronary circulation		
Understand and explain blood pressure and pulse	• Define blood pressure • Factors which produce, maintain and affect blood pressure		
Understand and explain the conditions of high and low blood pressure	• Causes and effects of hypo and hyper tension • Way in which blood pressure is measured • Way in which blood pressure can be affected by massage		
Understand and explain the diseases and disorders of the circulatory system	To include the cause and effects of the following: • Anaemia • Varicose veins • Haemophilia • Arteriosclerosis • Atherosclerosis • HIV/AIDS • High blood pressure (hypertension) • Low blood pressure (hypotension) • High cholesterol • Hepatitis A, B &C • Coronary thrombosis • Septicaemia • Haemorrhoids • Phlebitis • Thrombus • Leukaemia • Aneurism • Stress		

Lymphatic System			
Understand and explain the structure and functions of the lymph Understand and explain the structure and function of the lymphatic system Understand and explain lymphatic tissue Understand and explain the position of the lymph nodes of the body Understand and explain the interrelationship between the circulatory and lymphatic systems, muscular system, digestive system, immune system Understand and explain the diseases and disorders of the lymphatic system	Describe the formation and composition of lymph and it's function to include: • Leucocytes • Lymphocytes • Waste products • Lymphatic Capillaries • Lymphatic Vessels • Lymphatic Nodes • Lymphatic Ducts • Describe the way in which Lymph is moved around the body ♦ Describe the structure function of all lymphatic tissue and the areas in which it can be found in the body: • Spleen • Lymph nodes • Tonsils • Peyer's Patches • Appendix • Superficial and deep cervical • Submandibular • Thoracic Duct • Right Lymphatic Duct • Axillary • Supratrochlear • Inguinal • Popliteal • Superficial and Deep Cervical • Anterior Auricular • Posterior Auricular • Occipital • Way in which blood becomes tissue fluid • Way in which excess tissue fluid is picked up by the lymphatic capillaries • Route which the lymph takes before it returns to the circulatory system • Oedema/Water retention • Hodgkin's disease • Lymphoedema	OHP/Whiteboard Lecture Q&A Handouts: Blank diagram of the main lymph nodes Homework Tests: 1. Structure and function of lymph and the lymphatic system 2. Test on the lymphatic system	6
Neurological System			
Understand and explain the structure and functions of the following parts of the nervous system Understand and explain the structure and functions of the Central Nervous System	• Neurone • Motor Neurone • Sensory Neurone • Mixed Nerve • Dendrite • Axon • Synapse • Neurilemma • Nodes of Ranvier • White Matter • Grey Matter • Myelin Sheath • End Feet/Axon Terminals • Ganglia • Reflex arc ♦ Central Nervous System • Brain • Spinal cord ♦ Peripheral Nervous System	OHP/Whiteboard Lecture, Q&A Handouts: Blank diagram of the brain and CNS Homework Tests	10

(CNS), the Peripheral and the Autonomic Nervous System (ANS)	• 31 pairs of spinal nerves • 12 pairs of cranial nerves ♦ Autonomic Nervous System • Sympathetic • Parasympathetic		
Understand and explain the effect of stress on the nervous system	• Demonstrate the way in which stress affects the fear, fight, flight syndrome • Describe the way in which various parts of the sympathetic and parasympathetic nervous systems can be affected by stress and possible diseases and disorders caused by stress		
Understand and briefly explain the structure and function of the brain and spinal cord	♦ Brain • Meninges – Pia, Arachnoid and Dura Mater • Cerebrospinal Fluid • Cerebrum • Cerebellum • Pons Varolii • Medulla Oblongata • Hypothalamus • Brain Stem ♦ Spinal cord • White Matter • Grey Matter • Dura, Arachnoid and Pia Mater • Cerebrospinal Fluid		
Understand and explain how a nerve impulse is created	• Changes in temperature, pressure and chemicals • Potassium and sodium ions		
Understand and explain the position and function of the spinal and cranial nerves	• 8 cervical • 12 thoracic • 5 lumbar • 1 coccygeal ♦ 5^{th}, 7^{th} & 11^{th} cranial nerves • Facial • Trigeminal • Accessory		
Understand and briefly explain the olfactory system	• Nose • Olfactory membranes (contain smell-sense cells) • Olfactory plexus		
Understand and explain the causes and effects of diseases and disorders of the nervous system	• Neuritis • Bells Palsy • Neuralgia • Parkinson's Disease • Stress • Myalgic Encephalomyelitis (ME) • Cerebral Palsy • Multiple Sclerosis • Sciatica • Motor Neurone Disease		

Endocrine System			
Understand and explain (with the aid of a diagram) the position of the main Endocrine glands, hormones secreted and the result of hypo and hyper secretion of each	♦ **Pituitary** ***Posterior Lobe*** • Oxytocin • Antidiuretic Hormone (ADH or Vasopressin) ***Anterior lobe*** • Prolactin • Human Growth Hormone (HGH) • Thyroid Stimulating Hormone (TSH) • Adrenocorticotrophin hormone (ACTH) • Luteinising Hormone (LH) • Follicle Stimulating hormone (FSH) • Interstitial Cell Stimulating Hormone (ICH) • Melanin Stimulating Hormone (MSH) ♦ **Thyroid gland** • Thyroxin • Triiodothyronine • Calcitonin ♦ **Parathyroids** • Parathormone ♦ **Thymus** • Secretion of T Lymphocytes ♦ **Pineal** • Releases Melatonin ♦ **Islets of Langerhans** • Insulin • Glucagon • Glycogen ♦ **Adrenal medulla** • Adrenalin • Noradrenalin ♦ **Adrenal cortex** • Mineralocorticoids • Glucocorticoids • Sex Hormones ♦ **Ovaries** • Oestrogen • Progesterone ♦ **Testes** • Testosterone	OHP/Whiteboard Lecture Q&A Handouts: 1. Blank diagram of the body for labelling where all the endocrine glands are 2. Table showing effects of hypo and hyper secretion of all the hormones Homework Tests	8
Understand and explain the effects of hormones on the body	• To include knowledge of the effects of specific hormones on the body at puberty, pregnancy, menopause and the menstrual cycle		
Understand and explain the interrelationship of the endocrine system with other systems	• Nervous system • Circulatory system • Digestive system • Reproductive system • Skin		
Understand and explain the causes and effects of various endocrine diseases and disorders	• Addison's Syndrome • Amenorrhoea • Cushing's Syndrome • Pre-Menstrual Syndrome • Polycystic Ovarian Syndrome • Stress • Diabetes Mellitus • Diabetes Insipidus • Endometriosis		

Respiratory System			
Understand and explain the structure of the respiratory system and the function of each organ Understand and explain external respiration, i.e. the process and mechanism of breathing Understand and explain internal respiration Understand and explain the chemical control of the respiration Understand and explain nervous control of respiration Understand and explain the structure and function of the pulmonary circulation Understand and explain the interrelationship of the respiratory system with other systems of the body Understand and explain the causes and effects of diseases and disorders of the respiratory system	• Nose • Nasal cavity • Larynx • Pharynx • Trachea • Bronchi • Bronchioles • Alveoli • Lungs • Pleura (visceral, parietal, pleural cavity) • Diaphragm • Intercostals • Inhalation and the organs involved • Expiration and the organs involved • Process of diffusion in the alveoli • Describe the way in which exchange of gases takes place between the cells and the circulatory system • Position, function and role of the chemo-receptors • Role of the brain, i.e. the pons varolii and medulla oblongata in the process of respiration • Structure and function of the heart • Pulmonary artery • Pulmonary vein • Lungs • Pulmonary alveoli • Process of gaseous exchange • Circulatory system • Nervous system • Muscular system • Bronchitis • Emphysema • Pleurisy • Pneumonia • Tuberculosis • Asthma • Rhinitis • Hay fever • Stress • Sinusitis	OHP/Whiteboard Lecture Q&A Handouts: 1. Blank diagram of the respiratory system 2. Explanation of the breathing mechanism Homework Tests	4
Digestive System			
Understand and explain the structure and function of the organs and accessory organs of the digestive system Understand and explain the function of digestion	• Alimentary canal • Salivary glands • Tongue • Teeth • Mouth • Epiglottis • Oesophagus • Stomach • Small intestine (Jejunum, Ileum, Duodenum) • Appendix • Large intestine • Rectum • Anus • ***Accessory organs*** • Liver • Gall bladder • Pancreas • Peristalsis • Ingestion • Digestion • Absorption • Defecation	OHP/Whiteboard Lecture Q&A Handouts: 1. Blank diagram of the digestive system 2. Table of the enzymes, what they digest and where Homework Tests	4

Understand and explain the process by which food stuffs are broken down as they pass through the alimentary canal during the digestive process Understand and explain the process of absorption of nutrients Understand and explain the function and where in the digestive system you would find the following Understand and explain the interrelationship of the digestive system with other systems of the body Understand and explain the causes and symptoms of the following diseases and disorders of the digestive system	• Action of rennin, hydrochloric acid and pepsin in the stomach • Action of pancreatic juice, i.e. trypsin and trypsinogen, lipase, amylase on peptones, fats and polysaccharides • Action of bile on fat • Action of intestinal juice – maltase, sucrase, lactase on disaccharides • Process of absorption of nutrients by the villi and lacteals contained in the small intestine • Enzyme • Proteins • Peptones • Polypeptides • Amino acids • Carbohydrates • Disaccharides • Monosaccharides • Fats • Fatty acids • Circulatory • Endocrine • Lymphatic • Muscular • Nervous • Appendicitis • Cirrhosis of the liver • Jaundice • Heartburn • Irritable bowel syndrome (IBS) • Ulcer • Hernia • Stress • Anorexia Nervosa • Bulimia Nervosa • Constipation • Gall stones • Diabetes Mellitus • Diabetes Insipidus • Coeliac's disease		
Urinary System			
Understand and explain the structure and function of the organs of the urinary system Understand and explain the process of filtration Understand and explain the composition of urine Understand and explain urine production Understand and explain the interrelationship of the urinary system with other body systems	• Kidney (cortex and medulla) • Pelvis • Ureter • Bladder • Urethra • Functions of the Bowmans capsule • Filtration • Re-absorption • Secretion /micturition • 2% urea • 96% water • 2% other substances, e.g. ammonia, sodium, potassium, phosphates, chlorides, sulphates, and excess vitamins • Colour is formed from bilirubin (bile pigment) • Cold and hot weather • Activity and inactivity • Stress • Circulatory system • Endocrine system • Skeletal system • The Skin	OHP/Whiteboard Lecture Q&A Handouts: Blank diagram of the urinary system Homework Tests	3

Understand and explain the causes and effects of the disorders and diseases of the urinary system	• Cystitis • Kidney stones • Nephritis		
Reproductive System			
Understand and explain the structure and function of the male and female reproductive systems Understand and explain the menstrual cycle Understand and explain the structure and function of the breast Understand and explain the causes and effects of the diseases and disorders of the reproductive system	• Prostate • Testes • Testicular vessels • Penis • Scrotum • Uterus • Fallopian tubes • Cervix • Ovary • Vagina • Labia ♦ Three phases • Menstrual • Proliferative • Secretory • Formation of the Graafian Follicle • Formation of the Corpus Luteum • Fatty tissue • Ducts • Nipple • Areolar • Lobules • Ectopic pregnancy • Amenorrhoea • Dysmenorrhoea • Pre-Menstrual Syndrome • Polycystic Ovarian Syndrome • Endometriosis • Mastitis • Stress	OHP/Whiteboard Lecture Q&A Handouts: Blank diagram of the reproductive system Homework Tests	3
Mock Exam	All systems to be tested within a mock paper of 1 hour duration	Mock exam paper	