

## **HFS206 Occupational Biomechanics**

**Level:** 2

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JULY

### **Synopsis:**

HFS206e addresses the structures, functions, capabilities and limitations of the musculo-skeletal system. The biological basis addresses structural, surface and functional anatomy, and some of the physiological processes underlying muscle contraction and control. The mechanics basis covers mechanical units, statics and dynamics. The biomechanics content addresses the measurement of posture and movement, and the associated moments, compressions and tensions in the various structures. The application content covers working postures, manual materials handling and manipulation activities. Contemporary occupational biomechanics also includes a collection of computer based biomechanical models. The pathology/epidemiology component addresses such things as low back strain and other work related musculo-skeletal disorders. Finally, the physical ergonomics component introduces various laboratory and field measurement tools and preventive approaches such as workplace, equipment, tool and task design.

### **Topics:**

- Introduction to structural, surface and functional anatomy
- Introduction to mechanics, kinetics and kinematics; biomechanics models and software
- Laboratory and field measurement of biomechanical functions
- Manual materials handling, back injuries
- Work related musculo-skeletal disorders, upper limb injuries
- Ergonomics design for the prevention of work related musculo-skeletal disorders

### **Textbooks:**

Karl Kroemer: Ergonomics: How to Design for Ease and Efficiency 3rd Academic Press  
ISBN-13: 9780128132968

**Learning Outcome:**

- Identify the structures and functions of the musculo-skeletal system.
- Describe the processes of measurement of posture and motion.
- Illustrate the principles of statics and dynamics to biomechanics.
- Discuss the stresses associated with various occupations and the pathology of work related musculoskeletal disorders.
- Determine appropriate field measurements and modeling tools to occupational situations.
- Analyse the results of both laboratory and field occupational biomechanics scenarios.
- Propose and design appropriate ergonomics interventions to occupational stresses.

**Assessment Strategies (Evening Class):**

<b>Components</b>	<b>Description</b>	<b>Weightage Allocation (%)</b>
Overall Continuous Assessment	GROUP BASED ASSIGNMENT 1	20
	QUIZ 1	10
Overall Examinable Components	Written Exam	70
<b>Total</b>		<b>100</b>