

**Second B.O.Th Year**  
**203.WORK PHYSIOLOGY & ERGONOMICS**

Total hours : 90 (40 Work Physiology + 50 Ergonomics)

Theory Examination Uni. External 70 + internal assessment 30 = 100 Marks

**COURSE OBJECTIVE:**

The student will be able to fulfill with 75% accuracy (as measured by written evaluation) the following objectives)

**WORK PHYSIOLOGY**

**(40 hrs)**

- 1) Explain the nature of aerobic & anaerobic processes. Describe physiology of anaerobic exercises.
- 2) Explain evaluation of physical performance by using various tests of maximum aerobic power and anaerobic power.
- 3) Describe principles & methods of physical training.
- 4) Explain the concepts of energy expenditure at work, rest, leisure & fatigue.
- 5) Outline the effects of nutrition in physical performance capacity.
- 6) Explain the mechanism of temperature regulation
- 7) Describe factors which affect physical performance.

**ERGONOMIC:**

**(50 hrs)**

- 1) Define & describe various areas of ergonomics
- 2) Define Anthropometry, enumerate facets — static & dynamic.  
Overview static anthropometry — differences in respect to gender ethnicity age occupational persons with disability, measurements, concept of 5' % 5th % and 95th % limitations a uses of data, principles in it's application.
- 3) Environmental physiology — Understand the types of environment. Briefly outline the effects environmental factors such as temperature, humidity, noise, vibration, visual environmental pollution on human body
- 4) Skill psychology — Explain Skill learning, stages involved, characteristics of well learnt task.
- 5) Man-machine oriented topics — Describe functioning of man-machine system, information processing theory.
- 6) Explain the design of work space & work equiprnt
- 7) Explain layout Qf equipment desin of seating & displays characteristics of controls & [he compatibility.
- 8) Explain the safety factors, accidents & their preventio9.
  
- 9) Describe concept of cognitive workload and organization of mental space.
- 10) Define & underline the assumptions of fundamental philosophy of time & motion stu...  
Explain the cycle of managerial control & its application.  
Outline the steps involved in scientific methods of solving problem.  
Enumerate methods of man-product analysis.

- 11) Enumerate steps in work-site job analysis and design considerations.
- 12) Explain scope of ergonomics in modern industrial society
- 13) Apply the principles of ergonomics in occupational therapy.

### **COURSE CONTENTS:**

#### **WORK PHYSIOLOGY**

**(40 hrs)**

- 1) Physical performance : Aerobic & anaerobic processes, physiology of aerobic and anaerol exercises
- 2) Evaluation of physical performance, tests of maximum aerobic power and anaerobic pow master step test tread mill bicycle ergometry, measurement of oxygen uptake
- 3) Principles & methods of physical training
- 4) Applied work physiology : energy expenditure at work, rest, leisure & fatigue.
- 5) Nutrition and physiology performance
- 6) Temperature regulation
- 7) Factors affecting performance

#### **ERGONOMICS:**

**(50 hrs)**

- 1) Definition & areas of ergonomics
- 2) Anthropometry — definition, facets viz, static & dynamic  
Static anthropometry — differences in respect to gender, ethnicity, age, occupation, person with disability, measurements, concept of 5<sup>th</sup> %, 50% and 95<sup>th</sup> %, limitations, and uses data, principles in it's application.
- 3) Environmental physiology — types of environment, effects of environmental factors such as temperature, humidity, noise vibration, visual environment, pollution, on human body.
- 4) Skill psychology — Skill learning, stages involved characteristics of well — learnt task
- 5) Man-machine oriented topics — functioning of man-machine system, information-proceession theory
- 6) Design of work space and work equipment
- 7) Layout of equipment, design of seating characteristics of display & contort, their compatibility
- 8) Safety factors — accidents and their prevention
- 9) Cognitive workload and organization of mental space
- 10) Time & motion study—definition, assumptions of fundamental philosophy of time & moti.... Study, cycle of managerial control & its application, steps invoved in scientific methods solving problem. Outline of methods of man product analysis.
- 11) Work-site job analysis and design considerations
- 12) Scope of ergonomics in modern industrial society

13) Application of ergonomics in O.T.

**BOOKS RECOMMENDED:**

- 1) Astrand RA. Rodahe K. : Text book of work physiology
- 2) Fths P.M. & Posner M.I. : Human performance
- 3) Mural K.F. — Ergonomics: man in his working environment
- 4) Mundel M.E. Motion & time study: principles & practices
- 5) Karen Jacobs: Ergonomics for therapists