**Definition**

Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies theoretical principles, data and methods to design in order to optimize human well being and overall system performance.

Practitioners of ergonomics, ergonomists, contribute to the planning, design and evaluation of tasks, jobs, products, organizations, environments and systems in order to make them compatible with the needs, abilities and limitations of people.

**Domains of Specialization**

Derived from the Greek ergon (work) and nomos (laws) to denote the science of work, ergonomics is a systems-oriented discipline, which now applies to all aspects of human activity.  Practicing ergonomists must have a broad understanding of the full scope of the discipline, taking into account the physical, cognitive, social, organizational, environmental and other relevant factors.  Ergonomists often work in particular economic sectors or application domains.  These application domains are not mutually exclusive and they evolve constantly.  New ones are created; old ones take on new perspectives. Within the discipline, domains of specialization represent deeper competencies in specific human attributes or characteristics of human interaction:

* **Physical Ergonomics**

Physical ergonomics is concerned with human anatomical, anthropometric, physiological and biomechanical characteristics as they relate to physical activity.  The relevant topics include working postures, materials handling, repetitive movements, work-related musculoskeletal disorders, workplace layout, safety and health.

* **Cognitive Ergonomics**

Cognitive ergonomics is concerned with mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system. The relevant topics include mental workload, decision-making, skilled performance, human-computer interaction, human reliability, work stress and training as these may relate to human-system design.

* **Organizational Ergonomics**

Organizational ergonomics is concerned with the optimization of sociotechnical systems, including their organizational structures, policies, and processes. The relevant topics include communication, crew resource management, work design, design of working times, teamwork, participatory design, community ergonomics, cooperative work, new work paradigms, organizational culture, virtual organizations, telework, and quality management.

**What is Ergonomics?**

At its simplest definition ergonomics literally means the science of work. So ergonomists, i.e. the practitioners of ergonomics, study work, how work is done and how to work better.

It is the attempt to make work better that ergonomics becomes so useful. And that is also where making things comfortable and efficient comes into play.

Ergonomics is commonly thought of in terms of products. But it can be equally useful in the design of services or processes.

It is used in design in many complex ways. However, what you, or the user, is most concerned with is, “How can I use the product or service, will it meet my needs, and will I like using it?” Ergonomics helps define how it is used, how it meets you needs, and most importantly if you like it. It makes things comfy and efficient.

Human factors(Ergonomics)

• Human factor objectives:

– To enhance the effectiveness and efficiency with which

work and other activities are carried out.

• Increasing convenience of use,reduced errors, increased

productivity.

• Only a subset ofthe objectives are generally of highestimportance

in a specific application.

– To enhance certain desirable human values.

• Including improved safety,reduced fatigue and stress, increasing

comfort, greater user acceptance, increasing job satisfaction, and

improving quality of life.

• The objectives are usually correlated. • Approach of human factors:

– Itisthe systematic application ofrelevantinformation

about human capabilities, limitations, characteristics,

behavior, andmotivation to the design ofthings and

procedures people use and the environmentin which they

use them.

– Designing for human use and optimizing working and living

conditions.

– Human factors discovers and appliesinformation about

human behavior, abilities, limitations, and other

characteristicsto the design oftools,machines,systems,

tasks, jobs, and environmentsfor productive,safe,

comfortable, and effective human use