



Clinical & Behavioral-Based Ergonomics

CBES[®] Course Syllabus and Credentialing Criteria

Monday - Day 1: CBES[®] Certification Course

08:30 - 09:00 Registration

09:00 - 10:00 Introduction to Ergonomics and the CBES Approach

10:00 - 10:15 *Posture Relief Break*

10:15 - 11:45 Clinical Anatomy and Biomechanics

11:45 - 01:00 *Lunch*

01:00 - 03:00 Wellness, Behavioral Modification and Ergonomic Approaches to Aging Related Effects on Work Performance

Degenerative and Rheumatoid Arthritis

Cardiovascular Disease

Diabetes

Cancer

Visual and Auditory Changes

Neurological Changes Related to Balance and Reaction Time

03:00 - 03:15 *Posture Relief Break*

03:15 - 05:00 Musculoskeletal Disorders (MSDs)

Mechanisms of Injury to the Musculoskeletal System

Causes of Sprains and Strains / Tenosynovitis

Causes of Bursitis

Causes of Common MSDs:

Spinal Disorders: Cervical, Thoracic and Lumbar

- a. Herniated discs
- b. Degenerative disc disease
- c. Foraminal Stenosis
- d. Bone spurs
- e. Nerve Impingements
- f. Spondylolisthesis
- g. Scoliosis

Shoulder Disorders

- a. Subacromial bursitis
- b. Rotator Cuff Disorders
- c. Impingement Syndromes

Elbow, Wrist and Hand Disorders

- a. Bicipital tendonitis
- b. Olecranon bursitis
- c. Ulnar neuritis at the elbow and wrist
- d. Carpal tunnel syndrome
- e. Raynaud's Disease
- f. DeQuervain's Syndrome

Hip, Knee, and Ankle/Foot

Tuesday - Day 2: CBES® Certification Course

08:00 - 10:00 Musculoskeletal Disorders (MSDs) & Human Factors Continues

10:00 - 10:15 *Posture Relief Break*

10:15 - 11:45 Musculoskeletal Disorders (MSDs) & Human Factors Concludes

11:45 - 01:00 *Lunch Break*

01:00 – 03:00 Clinical & Behavioral-Based Office Ergonomics

Why Humans are not Physically Designed to Work in Offices

Biomechanics of Seated Posture

- a. Forward head posture and effects on craniovertebral system
- b. Chronic neck postures that lead to cervical disorders
- c. Chronic neck postures that increase risk of strokes
- d. Rounded shoulder and effects on blood flow and MSDs
- e. Reaching and effects on blood flow and muscle tension
- f. Wrist postures that increase risk of CTS and Ulnar neuritis
- g. Arm positioning – relation to tennis elbow
- h. Slumped posture and muscle imbalance issues
- i. Seated postures and effects on lumbar disc pressure

Office Space Design

Chair Design Characteristics for Proper Ergonomics

Keyboard Design Issues

Input Design Issues

Monitor Design Issues

Glare Control Issues and Office Lighting

Addressing Bifocals, Trifocals and Progressive Lens

Determining Optimal Focal Range

Document Holder Positioning and Design Issues

Telephone Positioning and Design Issues

Document Storage and Material Handling for Office Workers

Effects of Office Work on Metabolism

Proper Stretching Exercises for Office Workers

03:30 - 03:45 *Posture Relief Break*

03:45 - 05:00 Office Ergonomics Continues

Wednesday - Day 3: CBES® Certification Course

Time: Topic:

08:00 - 10:00 Office Ergonomics Review

10:00 - 10:15 *Posture Relief Break*

10:15 - 12:00 Office Ergonomics Case Presentations

12:00 - 01:00 *Lunch Break*

01:00 - 03:30 Office Ergonomics Lab

03:30 – 03:45 *Posture Relief Break*

03:45 – 04:30 Office Ergonomics Lab

Thursday - Day 4: CBES[®] Certification Course

Time: **Topics:**

08:00 - 10:00 Introduction to Field Ergonomics

Field Ergonomic Risk Factors and Assessments

- a. Posture
- b. Repetition
- c. Force
 - Lifting
 - Carrying
 - Pushing / pulling
 - Valve design and handling
- d. Extremity vibration
 - Effect on sensory nerves
 - Effect on muscle tension
 - Effect on capillary blood flow
 - Relation to carpal tunnel syndrome
- e. Whole body vibration
 - Effect on spinal disc nutrition
 - Effect on muscle tension
- f. Contact stress
- g. Heat and cold

10:00 - 10:15 *Posture Relief Break*

10:15 - 12:00 Field Ergonomic Remedies

12:00 - 01:00 *Lunch Break*

01:00 - 03:00 The NIOSH Lift Equation

03:00 - 03:15 *Posture Relief Break*

03:15 - 05:00 Application of the NIOSH Lift Equation – Lab

Friday - Day 5: CBES[®] Certification Course

08:00 - 09:00 Sequential Stretching on the Job - Lab

09:00 - 10:00 Job Demands Validation -Matching Physical Capacities to Job Demands

10:00 - 10:15 *Posture Relief Break*

10:15 - 11:00 Work Physiology Laboratory

11:00 - 12:00 *To Be an Ergonomic Specialist Game*

12:00 - 01:00 Distribution of CBES Examinations

Review of Criteria for CBES Certification

Course concludes

CBES® Course Objectives:

Upon completion of the CBES course, students will thoroughly understand:

01. The definition and science of ergonomics and its role in injury prevention and wellness.
02. Types of musculoskeletal injuries and illnesses related to poor ergonomics and lifestyles.
03. Work-related (ergonomic) and lifestyle-related causes of MSDs and illness.
04. OSHA ergonomic guidelines and current policies.
05. Clinical anatomy and biomechanical principles that form the foundation of ergonomics and wellness.
06. Effects of aging on human performance and work capacities.
07. How to perform detailed ergonomic risk assessments of both office and field work environments.
08. How to apply and integrate behavioral-based, wellness, and ergonomic principles into a highly effective corporate-wide injury prevention and ergonomics program that will have a significant impact on the prevention of musculoskeletal disorders and disease.
09. How to develop appropriate metrics to measure outcomes and estimate return on investment (ROI).
10. How to effectively resolve ergonomic problems with no-cost and low costs interventions.
11. How to establish and maintain policies and procedures for corporate-wide ergonomics and wellness programs.
12. How to analyze physical demands of a job and conduct ADA and EEOC compliant functional testing for employees
13. How to establish an early injury intervention program that works.
14. Methods to conduct job physical demands validations to formulate functional job descriptions.
15. ADA and EEOC requirements for employee hiring practices and return to work after injury.
16. The pitfalls of reactive medicine and best medical management techniques for common MSDs.

CBES® Credentialing Requirements

CBES® students who attend all five days of the CBES® course will receive a professional certificate of course attendance. Completion of the CBES® course alone does not permit the use of the credentials, “CBES”, behind their names. Students that desire CBES® credentialing must successfully complete post-course CBES® requirements. Credentialing involves a 2-step assessment process that determines the student’s

- 1.) understanding of knowledge and key principles imparted in the CBES course and,
- 2.) abilities to competently apply CBES® knowledge and principles in actual office and/or field ergonomic assessments.

Students may become CBES credentialed in office ergonomics, field ergonomics or both. In order to become CBES® credentialed, each student, upon completion of the entire CBES® course, must be able to successfully pass a take-home examination and demonstrate competence in conducting office and/or field ergonomic assessments according to the following criteria:

Phase I of Credentialing Process: CBES® Take-Home Examination

This is an open-book, multiple-choice examination. This examination is administered upon completion of the course to test the student’s knowledge of the key points addressed in the CBES® course. The CBES® examination is designed to be a learning tool. Upon receipt of the CBES® Examination, the student who seeks credentialing is required to complete and return two copies of the completed examination with a stamped self-addressed envelop enclosed to ISR Institute within 2 weeks of course completion.

A passing score of 80% is required. CBES® examination grades are maintained strictly confidential and are not shared with anyone without expressed written permission of the student. Scores below 80% require a re-take examination with a resulting pass score to continue the credentialing process. Once a student passes the

CBES[®] examination, he/she is qualified to proceed with phase II of the credentialing process (i.e., submission of ergonomic reports).

Phase II of Credentialing: CBES[®] Ergonomic Assessments:

CBES Credentialing Office and Field: Students desiring to be CBES credentialed in both office and field ergonomics are required to complete and submit 5 office and 5 field ergonomic reports to ISR Institute.

CBES Credentialing Office Only: Students desiring to be credentialed in office ergonomics only are required to complete and submit 10 office ergonomic reports to ISR Institute for review.

CBES Credentialing Field Only: Students desiring to be credentialed in field ergonomics only are required to complete and submit 10 field ergonomic reports to ISR Institute for review.

Office Ergonomics: The CBES[®] office ergonomic evaluation form provided during the CBES[®] course must be used for all office ergonomic assessments for credentialing. Before and after photographs are required that clearly shows problems and interventions.

Field Ergonomics: Field ergonomic reports can be based on a specific job task or job task cycle. Different job tasks or job task cycles from the same work environment can be provided to satisfy the criteria for credentialing. At least one field ergonomic assessment must show application of the NIOSH lift equation. The NIOSH Lift Equation work sheet (provided in the CBES[®] course) with all calculations shown must be attached to the submission. A student may use the CBES[®] Field Ergonomic Evaluation protocol provided during the CBES[®] course but the use of this specific form is not required for the field report. However, the basic format for the field ergonomic reports must include:

- ◆ Student's name
- ◆ Date of analysis
- ◆ Location of analysis (provide address if appropriate)
- ◆ Job task analyzed
- ◆ Risk factors identified
- ◆ Methods used to reduce or eliminate risk factors addressing
 - Engineering interventions (no cost, low cost, and high cost)
 - Administrative interventions. and
 - Behavioral-based interventions
- ◆ Photographs or video of the task analyzed

Students are asked to take photographs of office station and field job task site in a manner that will clearly reveal the ergonomic risk factors being addressed. There is no time period requirement for the ergonomic assessments. All ergonomic evaluation forms taught in the course will be provided to students on CD for unlimited use.

Submission Requirements for Credentialing: Submission of all reports in one packet is required for credentialing. Partial submissions are not accepted. Submissions must consist of hard copies of each ergonomic report with photographs and supporting data to ISR Institute (address below) and electronic versions on CD or DVD. Do not e-mail reports.

If reports reveal satisfactory competence and understanding of key concepts, reports will be accepted for CBES[®] credentialing and maintained on file with the student's examination. If insufficient evidence of full competency is demonstrated, the basis for constructive improvement will be provided in writing to the student with a request for an additional report to address any deficiencies identified. Once the additional report or reports are received and competency shown, then the student will be awarded CBES credentials. Credentialed students receive a professional certificate with CBES designations.