

HUMAN KINETICS AND ERGONOMICS

Level 2 Ergonomics Assessment of Physical Work

2024 Short Course



RHODES UNIVERSITY
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Human Kinetics and Ergonomics

Level 2 Ergonomics Assessment of Physical Work

Short Course



Background

The Human Kinetics and Ergonomics (HKE) Department at Rhodes University is currently the sole provider of undergraduate and postgraduate ergonomics education in South Africa. Furthermore, the staff in the HKE department are intrinsically involved in ergonomics within both the South African and the international ergonomics community. Therefore, the Department believes it plays an important role in providing suitable ergonomics training to practitioners who, as part of their duties, must ensure company compliance with the Ergonomics Regulations.

Since 2015, the HKE Department has trained numerous practitioners in ergonomics in the “Certificate in Ergonomics” short course, including inspectors from the Department of Employment and Labour, staff from the Gauteng Department of Health, fellow academics, and practitioners from a variety of industries. Since the announcement of the promulgation of the Ergonomics Regulations in December 2019, interest in ergonomics training has increased considerably, and this has prompted the HKE Department to structure its short courses in a manner that are, a) be responsive to the Ergonomics Regulations, and b) more accessible in terms of time and money available for a wide range of industries (i.e., SMME’s to large corporations).

It is however vital that the ergonomics short courses on offer fulfil the university’s policy requirements for short courses, and that the content of the reworked ergonomics training courses remain aligned with the educational knowledge required by the Professional Affairs Board (PAB) of the Ergonomics Society of South Africa (ESSA) and its certification criteria. In short, the reworked version of the former “Certificate in Ergonomics” covers the same content as the course offered previously, but in a different format, thus offering greater accessibility and flexibility for course participants.

The short course “Level 2 Ergonomics Assessment of Physical Work” is the third course in the series of 4 training courses offered by HKE Department (refer to Table I). Furthermore, the Department offers the opportunity to perform self-directed project work under the guidance of an HKE-appointed supervisor to gain practical experience. Together, these courses provide a framework of knowledge covering the breadth of basic ergonomics theory, ergonomics risk assessments, ergonomics programmes, professional issues, and physical and cognitive ergonomics assessments, and will provide a suitable level of education for participants intending to register as Certified Ergonomics Associate (CEA) with the Professional Affairs Board (PAB) of the Ergonomics Society of South Africa (ESSA).

Table 1: Overview of ergonomics training courses offered by the HKE Department

	Short Course	Nature of Module	Requirements	Duration	Total Hours
1	Introduction to Ergonomics and Ergonomics Programmes	Online	<ul style="list-style-type: none"> • 60 hrs Theory • 20 hrs Project 	2 Months <ul style="list-style-type: none"> • Expectation of 10hrs per week 	80
2	Level 1 Ergonomics Risk Assessment and Controls	Blended Learning *	<ul style="list-style-type: none"> • 20 hrs Theory • 20 hrs Practicals • 20 hrs Project 	3 Weeks <ul style="list-style-type: none"> • 2 weeks Online • 1 week Face-to-Face 	60
3	Level 2 Ergonomics Assessment of Physical Work	Blended Learning *	<ul style="list-style-type: none"> • 30 hrs Theory • 20 hrs Practicals • 30 hrs Project 	1 Month <ul style="list-style-type: none"> • 3 weeks Online • 1 week Face-to-Face 	80
4	Level 2 Ergonomics Assessment of Cognitive Work	Blended Learning *	<ul style="list-style-type: none"> • 30 hrs Theory • 20 hrs Practicals • 30 hrs Project 	1 Month <ul style="list-style-type: none"> • 3 weeks Online • 1 week Face-to-Face 	80
5	Ergonomics Project	Online	<ul style="list-style-type: none"> • 60 hrs Project 	2 Months <ul style="list-style-type: none"> • Online activities and self-directed work under supervision 	60

** Blended learning refers to a combination of online and face-to-face activities*

Course Principles

This course makes use of an active and experiential approach to learning and is based on the principles of applied learning and reflective learning. It is necessary to first understand theoretical concepts and be able to apply these to one's own working environment before performing any practical ergonomics activities. Reflective learning is based on Deming's Plan-Do-Check-Act cycle and allows participants to take ownership of their learning process.

Course Description

The purpose of the course "Level 2 Ergonomics Assessment of Physical Work" is two-fold: firstly, to introduce participants to the domain of physical ergonomics and the physical risk screening process, and secondly, to provide an overview of ergonomics tools for physical risk assessment, including the assessment of manual work and body postures within the work environment. This course structure has a blended learning approach with both online and face-to-face elements. Face-to-face interactions aim to provide practical opportunities for participants, by providing a platform for experiential learning.

Course Outline

Table II provides an overview of the topics covered in this course, how they are aligned with the CEA certification criteria put forward by the ESSA PAB and how the 80 hours that make up this course are allocated:

Table II: Topics covered in the “Level 2 Ergonomics Assessment of Physical Work” course and the time allocation towards ESSA PAB requirements.

Topic	Content	Time allocation and PAB criteria
Work Design considerations	<ul style="list-style-type: none"> • Anthropometry and design • Reach and clearance • Body posture • Seated operators • Visual fields • Computer Workstations 	Workplace Design (4hrs) Anatomy and Physiology, Demographics (4hrs)
Work-related Risk Factors	<ul style="list-style-type: none"> • Physical & physiological risk factors • Psychosocial considerations 	Anatomy and Physiology, Demographics (3hrs) Human Psychology (1hr) Social & Organizational Aspects (1hr) Physical Environment (1hr)
Risk Screening	<ul style="list-style-type: none"> • Systems description • Process analysis • Task identification and description • Introduction to risk screening tools 	Ergonomics Approach (2hrs) Work Analysis (5hrs)
Assessment of Manual Materials Handling Tasks	<ul style="list-style-type: none"> • NIOSH Lifting equation • Liberty tables for lifting tasks, carrying tasks, pushing, and pulling tasks 	Anatomy and Physiology, Demographics (3hrs) Methods of Measurement & Investigation (4hrs) Workplace Design (2hrs) Applications (3hrs)
Assessment of Working Postures	<ul style="list-style-type: none"> • Tools for assessing whole body movement • Tools for assessing upper extremity work • Tools for assessing seated work • Tools for assessing office workstations 	Anatomy and Physiology, Demographics (2hrs) Methods of Measurement & Investigation (5hrs) Workplace Design (4hrs) Technology (3hrs) Applications (3hrs)
Assessment of Hand-intensive Tasks	<ul style="list-style-type: none"> • Tools for assessing highly repetitive tasks of the wrists and hands 	Anatomy and Physiology, Demographics (2hrs) Methods of Measurement & Investigation (2hrs) Workplace Design (2hrs) Applications (2hrs)
Report Writing	<ul style="list-style-type: none"> • Documenting the process, analysis, and outcomes of an ergonomics investigation 	Applications (2hrs)
Applications Project	<ul style="list-style-type: none"> • Applied Project 	Applications (20hrs)
TOTAL		80 hours

Intended Learning Outcomes

By the end of this course, participants should:

- Understand the principles of work-related risk factors from a physical ergonomics perspective
- Describe and engage with the documentation process of analysis and outcomes
- Be able to apply the risk screening process including task breakdown, process analysis and systems description.
- Understand the 'Level 2' risk screening tools available to the ergonomist, including the different assessment methods for manual materials handling activities, working postures, hand-intensive tasks, and office set-ups
- Have gained experience with the application of risk assessment methods

In addition to the specific intended outcomes mentioned above, there are generic outcomes that transcend all courses in this training series. These so-called 'critical cross-field outcomes' include the following skills:

- Mastery of concepts and development of core information in disciplines not previously studied
- Time management
- Computing skills
- Access and retrieval of information
- Basic data analysis techniques
- Verbal and written communication
- Argumentation and critical thinking
- Project management
- Stakeholder engagement skills
- Practical application of skills

Requirements for Course Participation

Prior learning: It is necessary for participants to have a diploma or an undergraduate degree from a recognized institution in a cognate discipline, for example, medicine, biokinetics, physiotherapy, engineering, industrial design, health, and safety, etc.

Furthermore, the applicant must have completed a course on the basic theory of ergonomics (for example, HKE Ergonomics Short Course 1: *Introduction to Ergonomics and Ergonomics Programmes*). Participants must also be familiar with concepts of risk, assessment of risk, basic ergonomics risk screenings and controls (for example, as taught in the HKE Ergonomics Short Course 2: *Level 1 Ergonomics Assessment and Controls*).

Language competence: Participants must have a solid grasp of the English language (verbal and in writing), since this is the language of tuition.

Computer competence and internet access: This course has an e-learning component; hence it is essential that participants are proficient with computer use and have regular access to the internet so they can engage in online discussions and activities.

Attendance at face-to-face seminars: Furthermore, the attendance at the face-to-face seminars is compulsory, so participants must make arrangements to attend these.

Mode of Delivery

This course adopts a blended learning approach; there are 40 hours of theoretical content, combined with 20 hours of experiential learning. Finally, there is a project component of 20 hours. The 60 hours of contact engagement consist of an online component, using the online learning management system “RUconnected” as well as a face-to-face component, which includes seminars, practical exercises as well as a fieldtrip.

Distribution of Hours

This course requires 80 hours of engagement from participants which are distributed over a total duration of 4 weeks (Table III). The course is preceded by an ‘introductory week’ (week 0) to familiarize participants with the learning management system (if necessary). This is followed by three weeks of online learning and one week face-to-face interactions. In total, the course comprises of 40 hours of theoretical content, and 20 hours of experiential learning. As professional registration with ESSA requires evidence of application, a take-home assignment will make up the remaining 20 hours of this course.

Table III: Breakdown for the course "Level 2 Assessment of Physical Work"

Breakdown of hours	
Online learning	<p>80 hours over 4 weeks:</p> <ul style="list-style-type: none">• Week 0: Logging onto learning management system (LMS); familiarization with LMS and course participants; preparatory readings / activities (for those not familiar with RUconnected).• Week 1,2,3: Online teaching and learning activities• Week 4: Face-to-Face teaching and learning activities

How is the Course run?

The preparatory / information week is intended to familiarize participants with the learning management system (e.g. logging on, navigating the site for those not yet familiar with RUconnected), as well as getting to know other participants. The activities performed during the three weeks of online teaching and learning activities will vary from day-to-day and topic-to-topic. Participants are expected to spend approximately 2 hours per day during the teaching and learning weeks on the online course activities, self-directed learning activities and assessments. Online forums mimic classroom discussions and require active engagement from participants. Compulsory readings are included where applicable, and additional resources are supplied for further learning. The face-to-face contact week is designed to make

use of experiential learning. Participants are exposed to hands-on practical experiences and a fieldtrip using equipment, measurement instruments, as well as covering skills relating to verbal presentations and report writing.

Cost of Course

The fees for this course are R 11 000.00 per participant unless otherwise negotiated. A minimum number of 10 participants is required to run the course. Course fees must be paid in full prior to the course.

How is the Course assessed?

For the qualification to be recognized by Rhodes University and by the Professional Affairs Board of the Ergonomics Society of South Africa, it is not only necessary for participants to have actively engaged with the teaching and learning activities during this course, but also to have demonstrated competence by completing assessments. Given the emphasis on practical competence and communicating the findings of ergonomics investigations, the assessment would involve presenting the findings of an ergonomics assessment verbally (i.e., a presentation), as well as a written report. The assessments are mandatory, and participants will be required to obtain an average mark of at least 50% to pass the course.

Evaluating the Course

During and upon completion of the course, participants will be required to provide feedback on the course and any improvement suggestions they may have. Course evaluations can be managed formally by means of an online questionnaire, or informally in a forum discussion, for example.