

HUMAN KINETICS AND ERGONOMICS

Level 1 Ergonomics Assessment
& Controls

2024 Short Course



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Table of Contents

General Background to the Ergonomics Training Series.....	3
Course Principles	4
Course Description	4
Course Outline.....	5
Intended Learning Outcomes.....	5
Requirements for Course Participation.....	6
Language competence:.....	6
Computer competence and internet access:	6
Mode of Delivery and Distribution of Hours.....	6
Cost of Course	7
Distribution of Hours.....	7
How is the Course run?	7
How is the Course assessed?	7
Evaluating the Course	8

Human Kinetics and Ergonomics

Level 1 Ergonomics Risk Assessment and Controls

Short Course



General Background to the Ergonomics Training Series

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 newly promulgated 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 restructure its ergonomics training short course, to a) be responsive to the Ergonomics Regulations, and b) be 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 contents 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, in order to offer greater accessibility and flexibility for course participants.

The short course “Level 1 Ergonomics Assessment and Controls” is the second 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 the course facilitator to gain practical experience. Together, these courses provide a framework of knowledge covering the breadth of ergonomics risk assessment, introduction to physical and cognitive ergonomics, and the hierarchy of controls, and will provide a suitable level of education for participants intending to register as Certified Ergonomics Associate (CEA) with the Professional Affairs Board of the Ergonomics Society of South Africa.

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 course "Level 1 Ergonomics Risk Assessment and Controls" is built on the first course "Introduction to Ergonomics and Ergonomics Programmes" in this training series. Its purpose is two-fold: firstly, to introduce the nature of Ergonomics Risk Assessment, with particular emphasis being placed on the risk assessment cycle, as well as assess the work system and identify potential problems at a basic level. Secondly, the course provides an overview on Ergonomics controls in relation to the administration of controls and the hierarchy of controls. This course structure has a blended learning approach with both online and face-to-face elements. Face-to-face elements aim to provide practical opportunities for students, 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 60 hours that make up this course are allocated:

Table II: Topics covered in the “Level 1 Ergonomics Risk Assessment and Controls” course and the time allocation towards ESSA PAB requirements.

Topic	Content	Time allocation and PAB criteria
Introduction to Risk Assessment	<ul style="list-style-type: none">• Principles of hazard and risk identification• Risk assessment cycle and levels of an ergonomics risk assessment• Balance theory• Understanding the work system (task analysis and work domain analysis)• Ergonomics checklists for Level 1 risk assessment• Documenting and reporting of assessment findings	Statistics and Experimental Design (5 hrs) Methods of Measurement & Investigation (10 hrs) Work Analysis (10 hrs) Applications (10 hrs)
Controls	<ul style="list-style-type: none">• Types of controls & hierarchy of controls• System structures• Planning and implementing controls	Work Organization Design (5 hrs)
Applications	<ul style="list-style-type: none">• Applied Project	Applications (20 hrs)
TOTAL		60 hours

Intended Learning Outcomes

- Understand the principles of risk assessment within a Human Factors and Ergonomics framework
- Understand the ergonomics aims and the nature of balance theory, namely between worker well-being and system optimization
- Be able to analyse and describe the work system at a basic level using tools such as task analysis or work domain analysis
- Appreciate the complexity of risk within the working environment
- Understand the risk assessment cycle and the role of the ergonomist within it
- Have an overview of the hierarchy of controls and systems structures
- Be able to propose an intervention development and implementation plan.

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
- 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 theoretical knowledge

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*).

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 daily 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 and Distribution of Hours

This course requires 60 hours of engagement from participants which is distributed over a total duration of 3 weeks (Table III). There are 20 hours of theoretical content, combined with 20 hours of experiential learning. Since this course adopts a blended learning approach, these 40 hours are split across both online and face-to-face aspects (10 hours online and 30 hours face-to-face). Finally, there is a project component of 20 hours. First, participants are guided through a range of activities with the support of facilitators and using the online learning management system “RUconnected”. Then, participants will attend one week of face-to-face lectures, allowing for practical work with the facilitator. Additional time will need to be allocated for assessments.

Cost of Course

The fees for this particular course are R 8000.00 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.

Distribution of Hours

This course requires 60 hours of engagement from participants which as distributed over a total duration of 3 weeks (Table III).

Table III: Breakdown of hours for "Level 1 Ergonomics Risk Assessment and Controls"

Breakdown of hours	
Online learning	<p>60 hours over 3 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 yet familiar with RUconnected).• Weeks 1&2: Online Teaching and Learning activities (20hrs)• Week 3: Face-to-face interactions with practical components (40 hrs)

How is the Course run?

The preparatory / information week (week 0) is intended to familiarize participants with the learning management system (e.g. logging on, navigating the site), as well as getting to know other participants. The course overview and course materials are also supplied during this week. The learning activities performed during the first two weeks (weeks 1 & 2) of online teaching will vary from day-to-day and topic-to-topic. Participants are expected to spend approximately 1 hour per day during the online teaching and learning weeks on the interactive course activities, and self-directed learning activities. Online forums mimic classroom discussions and require active engagement from participants. Compulsory readings are kept to a minimum, but additional resources are supplied for further learning. The face-to-face week of contact (week 3) is designed to ensure access and experiential learning for participants. Hands-on practical activities during this week involve a fieldtrip, the use of equipment and measurement instruments, report writing and feedback. A take-home assignment must also be submitted.

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 a course, but also to have demonstrated competence by completing assessments. The course outcomes can be

assessed using a range of assessment approaches, including, but not limited to quizzes, tests, essays, or reports. These assignments are mandatory and to pass the course participants will be required to obtain an average minimum mark of 50% across all assessments.

Evaluating the Course

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