

HUMAN KINETICS AND ERGONOMICS

Level 1 Ergonomics Assessment
& Controls

2021 Short Course



RHODES UNIVERSITY
Where leaders learn

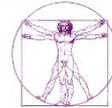
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Human Kinetics and Ergonomics

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, have to 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, 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 re-evaluate its 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 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 “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 an HKE-appointed supervisor 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	Approximate Duration	Total Hours
1	Introduction to Ergonomics and Ergonomics Programs	Online	<ul style="list-style-type: none"> • 60 hrs Theory • 20 hrs Project 	2 Months (expectation of 10hrs per week for 8 weeks)	80
2	Level 1 Ergonomics Assessment and Controls	Blended Learning	<ul style="list-style-type: none"> • 20 hrs Theory (online and face-to-face) • 20 hrs Labs/Pracs • 20 hours Project 	3 Weeks <ul style="list-style-type: none"> • 2 weeks online • 1 week face-to-face 	60
3	Level 2 Assessment – Physical work	Blended Learning	<ul style="list-style-type: none"> • 30 hrs Theory (online and face-to-face) • 20 hrs Labs/Pracs • 30 hours Project 	1 Month <ul style="list-style-type: none"> • 3 weeks online • 1 week face-to-face 	80
4	Level 2 Assessment – Cognitive Work	Blended Learning	<ul style="list-style-type: none"> • 30 hrs Theory (online and face-to-face) • 20 hrs Labs/Pracs • 30 hours Project 	1 Month <ul style="list-style-type: none"> • 3 weeks online • 1 week face-to-face 	80
5	Projects	Online	<ul style="list-style-type: none"> • 60 hours Project (under remote supervision) 	2 Months (expectation of 10 hours per week for 8 weeks, i.e. 1.5hrs per work day)	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 up on the first course in the training series "Introduction to Ergonomics and Ergonomics Programmes". Its purpose is two-fold: firstly, to provide an introduction to the nature of Ergonomics Risk Assessment. Particular emphasis is placed on the risk assessment cycle, as well as assessing the work system and identifying potential problems at a basic level. Secondly, the course provides an

overview on Ergonomics controls in relation to administration of said controls and the control hierarchy. 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” phase 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 	Work Analysis and Measurement <ul style="list-style-type: none"> 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. 	People & Technology - 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 wellbeing and system optimization
- Be able to understand the work system by analysing and describing it 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 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).

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.

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 1 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 will cost R 7000.00 per participant. A minimum number of 10 participants is required to run the course. Course fees have to 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	60 hours over 3 weeks: <ul style="list-style-type: none">• Week 0: Logging onto learning management system (LMS); familiarization with LMS and course participants; preparatory readings / activities.• 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 activities performed during the first two weeks (weeks 1 & 2) of online teaching and learning activities 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 experiences during this week involve fieldtrips, the use of equipment and measurement instruments, report writing and feedback. A take-home assignment will also need to be submitted

How is the Course assessed?

In order 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 assessment during each module. This course can be assessed using a range of assessment approaches, including, but not limited to quizzes,

tests, essays or reports. These assignments are mandatory and participants will be required to obtain an average mark of *50% across all assessments* in order to pass the course. This includes the take-home assignment.

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 an online questionnaire, or informally in a forum discussion, for example.