



Massey University

**Centre for Ergonomics, Occupational Safety and Health,
School of Public Health, College of Health,
Massey University, New Zealand**

Paper 128.300

Ergonomics/Human Factors: people, health, performance and design
(<http://ergonomics.massey.ac.nz>)

15 credit paper offered extramurally by the Centre for Ergonomics, Occupational Safety and Health (CErgOSH) via Stream over 2 semesters with a contact course at Palmerston North campus.

ERGONOMICS

Ergonomics is a fundamental human science and applied design technology that uses an interdisciplinary holistic approach to integrating work, people and environment to optimize human-system health, well-being and performance.

Content

This introductory course leads the student logically through the field of ergonomics as practised in New Zealand and internationally; from the underlying principles and history of ergonomics, via an overview of the body of knowledge available to ergonomists, to data collection, analysis and the role of practitioners.

The core modules (first two-thirds) cover ergonomics principles, micro and macro-ergonomics methods and data analysis associated with occupations: human physical and psychological capacity and limitations, organizational, work environment (e.g. noise, lighting, circadian), displays, control systems, machines and tools. The last third of the paper accommodates a wide range of student interests and degree courses by focusing on specialized work-human-system-environment ergonomics issues in sub-modules e.g. healthcare, design, evaluation, sport, occupational safety and health, science and technology, product development, computing, rehabilitation, aviation, management, human resources and business.

Ergonomics Principles and Scope

An introduction to the origins and objectives of ergonomics, including its practise in New Zealand today and the role of the New Zealand Ergonomics Society. A discussion on common human-machine system models and key concepts such as stress and strain, human error and fatigue.

Human Characteristics

An overview of human factors that affect performance and safety & health at work including: human psychology, information processing, anthropometry, biomechanics, and applied work physiology in a range of environments.

Work Analysis and measurement

An introduction to a range of investigative tools used by ergonomists in assessing existing work systems.

Design Applications

An outline of the key ergonomics principles relating to design and the role of the ergonomist in the various design processes. The emphasis being on the complete system rather than isolated parts of it. Within that, specific areas of attention include the design of: tasks, hand tools, buildings, documents, vehicles, workstations and shift patterns.

The content of the course is consistent with the Areas of Knowledge requirements of the New Zealand Ergonomics Society Certification Board, the Centre for Registration for European Ergonomists (CREE) and the International Ergonomics Association for Professional Certification. 128.300 is an introduction

to ergonomics but not the depth that would be needed by a student deciding to follow a career in ergonomics by studying the subject at post-graduate level in a **postgraduate diploma or masters**.

Learning outcomes

128.300 Ergonomics is an introduction to the discipline of ergonomics. On completion of this paper students should:

- have an accurate understanding of the scope of the field of ergonomics and its fundamental principles
- be aware of the need to research and apply knowledge about human behaviour, abilities, limitations and other characteristics in the design of work systems
- be able to apply basic principles of ergonomics
- understand the role of the practising ergonomist

Credits and semesters

This paper has a credit value of 15. The credit value gives you an indication of the total amount of time (including private study time and on-campus courses) that a student might reasonably expect to have to spend on a paper in order to satisfactorily complete the assessment requirements. For a 15 point paper a commitment of about 200 hours is expected, or about 7 hours per week during an academic year of about 24 weeks. 128.300 is a double semester extramural paper taught from Palmerston North campus with a short contact course.

Course controller

Professor Stephen Legg.

Textbooks

No set text. The extramural Stream site contains all the information required.

The following books are a sample of some highly relevant textbooks on ergonomics:

- Wilson, J.R. & Corlett, E.N. (2005) *Evaluation of Human Work*. 3rd edition. London: Taylor & Francis;
- Kroemer, K. & Grandjean, E. (2001). *Fitting the Task to the Human*;
- Ergonomics for Beginners: a quick reference guide. J Dul and B Weerdmeester. 9th edition, Taylor and Francis 1993.
- Introduction to Ergonomics (3rd edition). R S Bridger. Taylor and Francis, CRC Press, 2009

For further details of the Ergonomics Programme at Massey University, contact Professor Stephen Legg 0064 (0)6 350 5799 x2786, Fax 0064 (0)6 350 5796 Email: S.J.Legg@massey.ac.nz

<http://ergonomics.massey.ac.nz>